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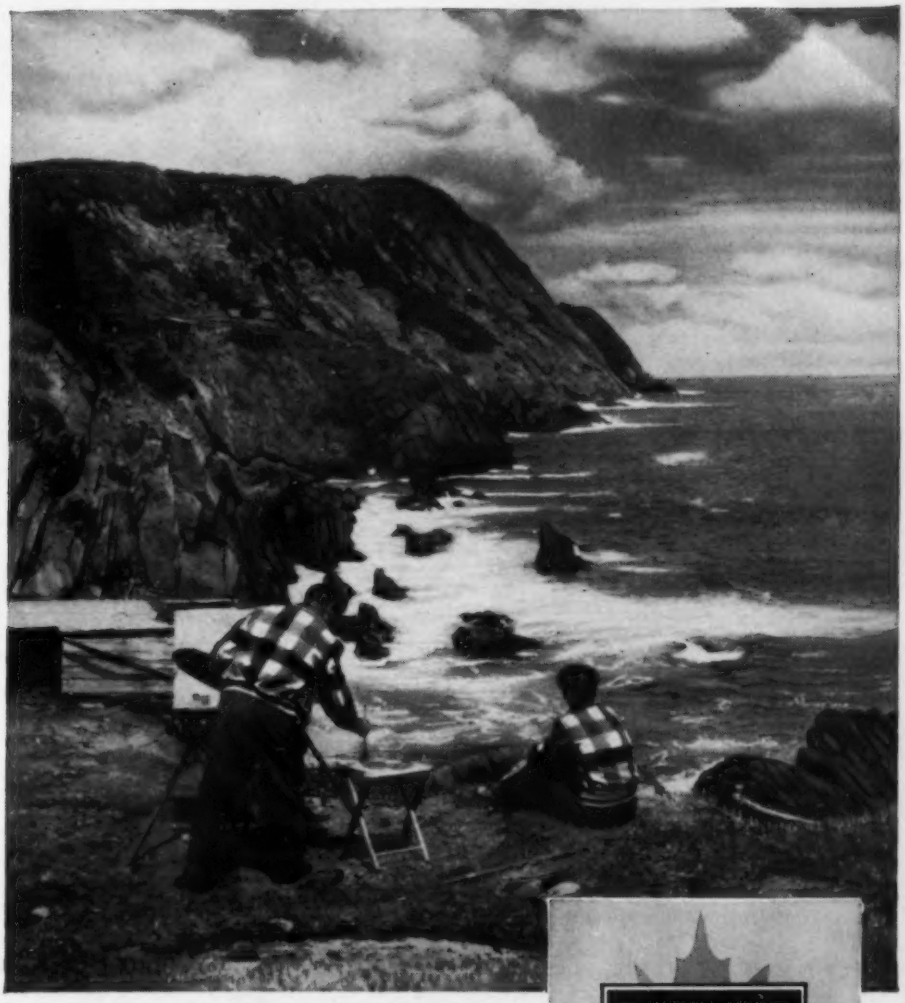

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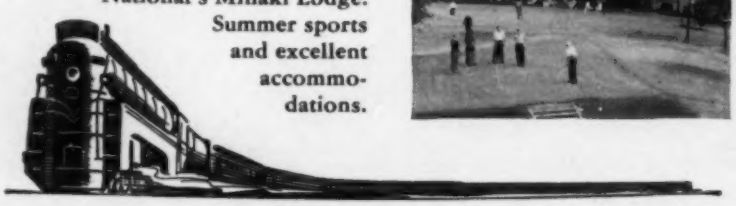

In May a stream of tulips flows past Canada's Parliament Buildings. (See page VIII) Malak

CANADIAN GEOGRAPHICAL JOURNAL

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Canadian Western Natural Gas Company Limited.

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An old-time team is this bowl of burl maple of the birdseye variety and the maple paddle polished by long years of use. The bowl is turned and is fifteen inches in diameter.

This mortar, turned from maple, is about eight inches high. If was probably used in an early kitchen for grinding or pulverizing cooking ingredients.

(The woodenware illustrated on these two pages is from the antique shop of J. E. Flanagan, Brockville, Ontario.)

The Woodenware of Ontario Pioneers

by PHIL SHACKLETON

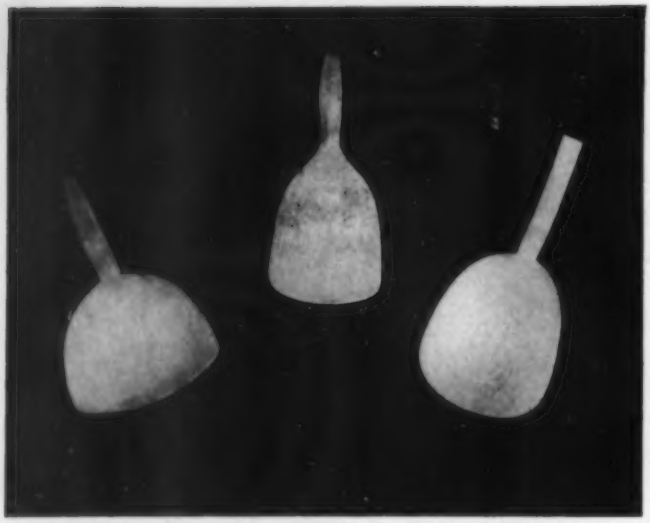
Photographs by Capital Press Service. Most of the woodenware illustrated is from the collection of Mr. and Mrs. Phil Shackleton.

WHATEVER was lacking in the pioneers' Upper Canada at the beginning of the nineteenth century, it wasn't wood. Like the Walrus and the Carpenter, settlers were discouraged to see such quantities of trees. But although forests had to be destroyed to make way for farms and homes and villages, wood from those forests soon became one of the most important resources in the lives of the settlers.

Mrs. Catherine Parr Trail wrote: "When the Backwoodsman first beholds the dense

Above:—Butter paddles for working water out of butter after churning come in a great variety of shapes and sizes. Second from right is a scoop of darker elm wood, used to remove butter from churn.

This maple chopping bowl has been refinished and waxed for modern use as a household ornament.



Three examples of late machine-made paddles for working water out of butter.

A pair of very fine butter paddles carved by hand. Example at top has handle cut from an extending branch. Paddle proper is almost a cross section of the tree trunk.

Three examples of butter paddles of the older hand-carved type. Paddles at left and right are stained with oil and still retain butter smell. Bleaching of paddle in centre indicates it may have been used as a cream skimmer.

mass of dark forest which his hands must clear from the face of the ground, he sees in it nothing more than a wilderness of vegetation which it is his lot to destroy; he does not know then how much that is essential to the comfort of his household is contained in the wild forest."[1]

It was obvious, of course, that their first homes would be built from forest timbers, that their first fences would be crude rows of stumps and roots dragged from their tiny fields, and that wood would be their only fuel.

Only later did they come to realize that wood could, indeed would have to, satisfy many hundreds of their needs. It was the one material of which there was no shortage. The implements for farming, for keeping house, for the numberless jobs in a frontier community, were scarce and expensive. Necessity demanded home-made substitutes.

The Indians before them had shown that fire and primitive cutting tools could turn the wood of the forest into bowls and crude scoops, into baskets, pounders and hollowed vessels for crushing corn.

The Loyalists who trekked from the rebellious thirteen colonies to Upper Canada had already learnt to carve and turn the wood at hand into spoons, plates or trenchers, bowls, rolling pins, mortars, pounders and mashers, buckets, mugs and many other tools and utensils. In Upper Canada, the lessons of the Indians, the experience of the Loyalists and the old country traditions of later settlers combined to produce a wide variety of woodenware from Canadian woods.

---

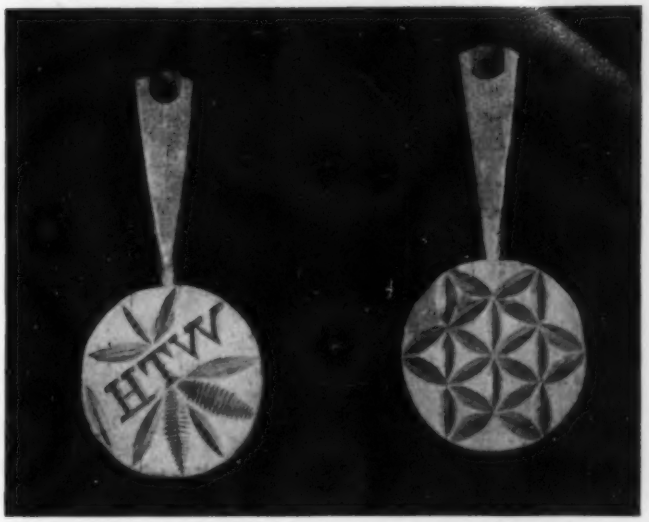
[1] A Canadian Emigrant Housekeeper's Guide, 1862.

Here and there in the farm country of Ontario, some of the old wooden utensils are still in use. More often they are to be found in lofts and attics, stored away with the furniture, clothing and other reminders of earlier fashions in living. Collectors who call this woodenware "antique" haunt country shops and auction sales in their quest for the quaint and unusual in scoops, bowls, yokes, piggins and the like. Many of the tools and implements devised to simplify farm and household tasks are now to be found in local historical museums.

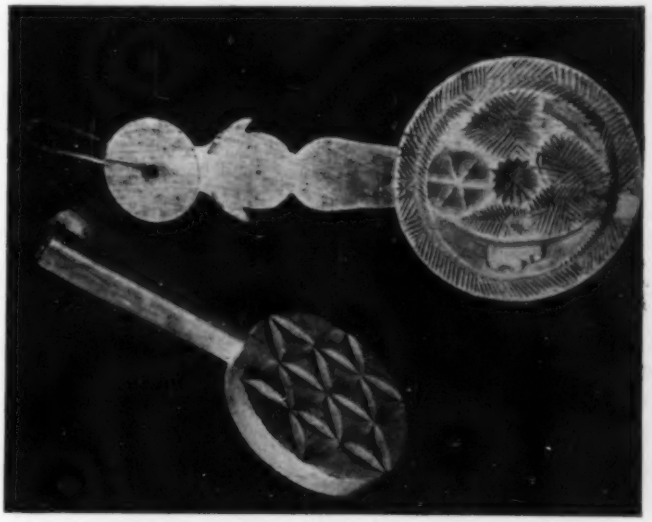
For those who love and appreciate craftsmanship, the early woodenware, deftly fashioned by hand, mellowed and worn by time and use, has definite appeal. For nearly a century the craft of hand-made woodenwares persisted, but eventually the cheaper mass-produced wares of the machine age took its place.

Most commonly found and easily identified of the old woodenwares are the bowls and paddles or scoops used in butter making. A hand carved scoop was used to remove the butter from the churn. Then it was dumped into a bowl, either carved in rectangular shape or turned in circular, and a paddle was used to work the excess water out of the butter. Although many years may have passed since they were last used, the oil-soaked wood of bowls and paddles still smells of butter.

Other examples of the craft may provide research problems for the woodenware detective. A rolling pin is unmistakable, except for the rare one made with only one handle, as is the wooden yoke designed for carrying two buckets, also of wood, of water, milk

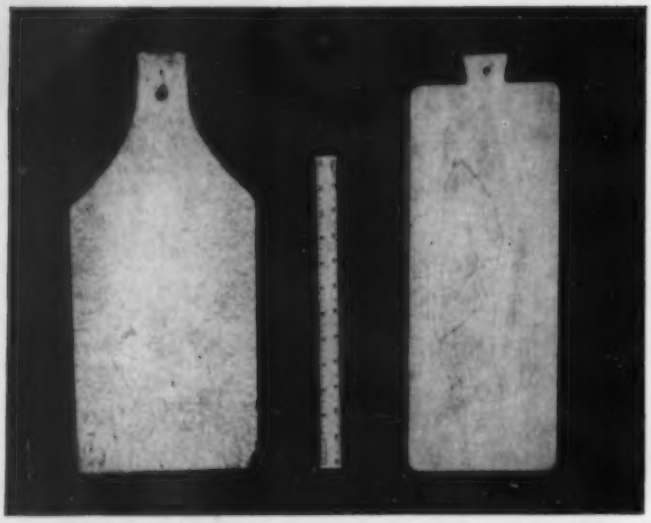


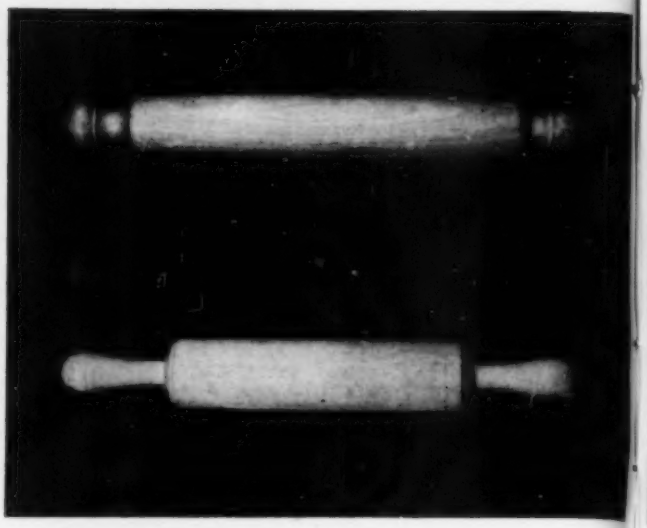
Two sides of the same hand-carved butter print. Initials of owner seldom appear on prints, but these date paddle about 1850.



A pair of rare butter prints. Heart and star motif on larger print are reminiscent of hex signs used to ward off evil spirits which might otherwise turn butter rancid.

Butter prints like these both measured and decorated the butter. Prints were turned on lathe but designs of stylized flowers, fruit or birds were carved by hand. Prints identified product at market and made it attractive.





Above left:—Bake boards, the example on left of pine, the other of maple, were originally used to insert and remove loaves from the oven. In recent years, they have served as bread slicing boards.

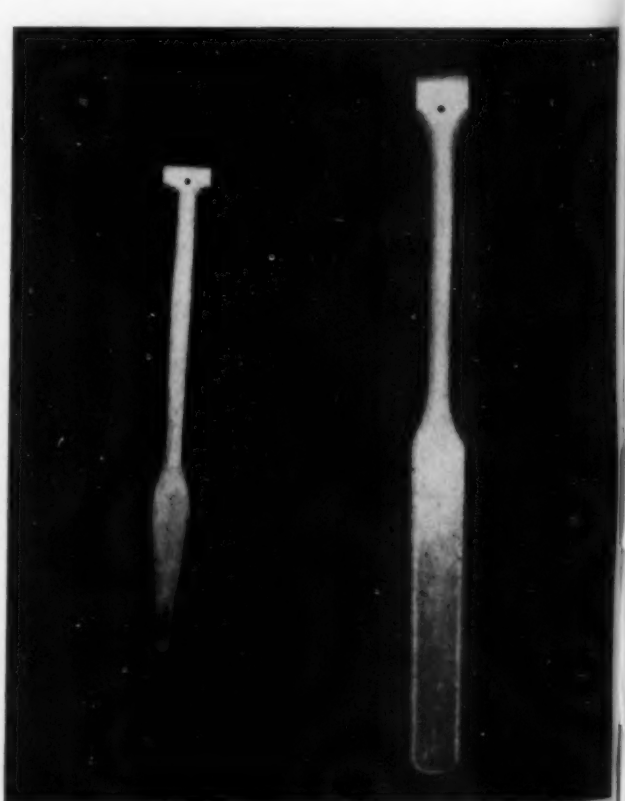
Above:—Earliest rolling pins had no handles but were tapered at both ends. Both of these are pantry veterans, the upper a transitional model which still retains the old taper. As with most tools used for food preparation and storage, maple is the favourite wood.

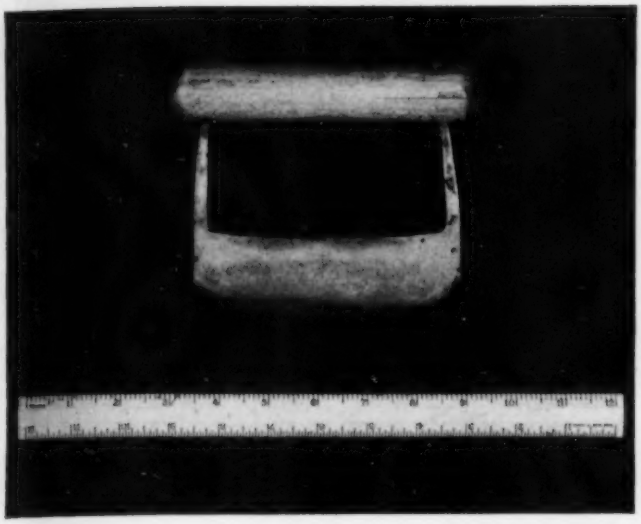
Left:—Fine chopping bowl of hard maple is eighteen inches long and made by hand. Marks of the chopping knife are clearly seen in bowl.

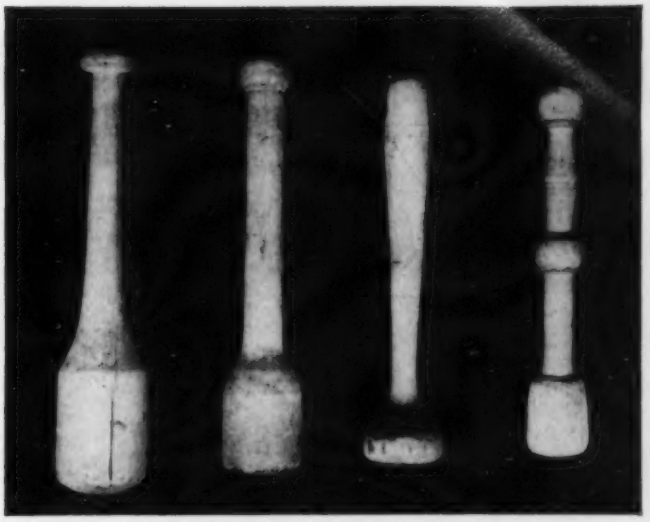
Below:—Stirring rods vary considerably in design. These are late examples, the one on right two feet in length. Shorter model is stained with bluing used in laundry.

or maple sap. But other utensils may require closer study for exact identification. Shape will usually suggest the general purpose for which an implement was intended: a bowl is a bowl; ladles, scoops and paddles are all in the same class; and stirring rods do not vary so much as to be confused with wooden knives. The real challenge is to determine whether a bowl was used for eating, for butter making, for collecting grease or for some other purpose.

Small boxes from the pantry can often be classified by smell. An unmistakable aroma, for instance, penetrates the wood of a spice box. When the weather is damp, tiny particles of salt and sugar will appear on the bottoms of containers in which these precious commodities were stored. Grease for soap making was kept in wooden bowls





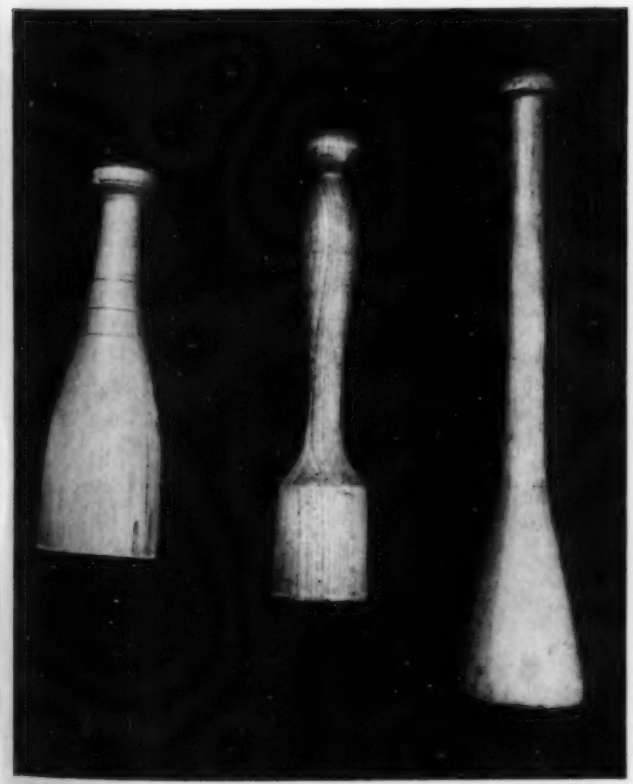


Above:—Chopping knife was indispensable tool in early kitchens. Blade is of hand-wrought iron. This knife belongs to Mrs. Norman Tripp of Spencerville, Ontario.

Above, right:—Although these implements were probably used as mashers in early kitchens, designs are more suggestive of pestles for grinding. Average length is twelve inches.

Right:—This stout, heavy bowl, about 20 inches long, is hand-carved from butternut. It was probably made originally as a sap trough, to catch maple sap, but persisting aroma indicates it was later used as a butter bowl.

Below:—A trio of mashers or pounders used in the old-fashioned kitchen. The longest example is about twenty inches long and is hand-carved. The other two are products of the lathe.



and has left very dark stains. Lye, the other soap ingredient, has bleached the wooden vessels in which it was kept.

Milk and cheese also tend to bleach woodenware. Dye sticks, of course, are stained with colour. Flour dust still hides in the cracks of an old dough box. The hand wrought iron blade of a chopper has left unmistakable marks in the old wooden chopping bowl. Such are the clues that piece together the history of domestic woodenwares.

At the earliest stage all wooden tools and utensils were fashioned by the householder for his own use. Although some continued to carve and turn their own wares, coopers soon appeared in the tiny communities and began to supply a great range of wooden products. A small workshop and forge was

common to many early farms, but it was usually the cooper who introduced the first primitive lathes to a frontier village.

The first settlers had whittled crude plates, spoons and other eating utensils, but even the crude spring pole lathe was capable of producing, with less effort on the part of the craftsman, more uniform wares. Pressure on a treadle pulled and bent the spring pole or sapling almost double. When released, the pole sprang to the vertical, giving a half turn to the work arm and thus to the block of wood which was destined to be shaped into a bowl, a butter print or some other piece of circular woodenware. It was still a tedious job to produce a useful implement, but the introduction of the spring pole lathe represented progress in the pioneer settlements.

The pioneer learned to fashion his own axe handles, whiffle trees, ox yokes, pails, bowls and so on. His first washing machine was a barrel or a hollowed section of tree trunk in which soiled clothing was ravaged by home-made soap and a heavy wooden pounder. The first ash leaches, in which lye was extracted from wood ashes, were hollowed sections of basswood logs. Even the hinges and latches on doors and windows were whittled from wood.

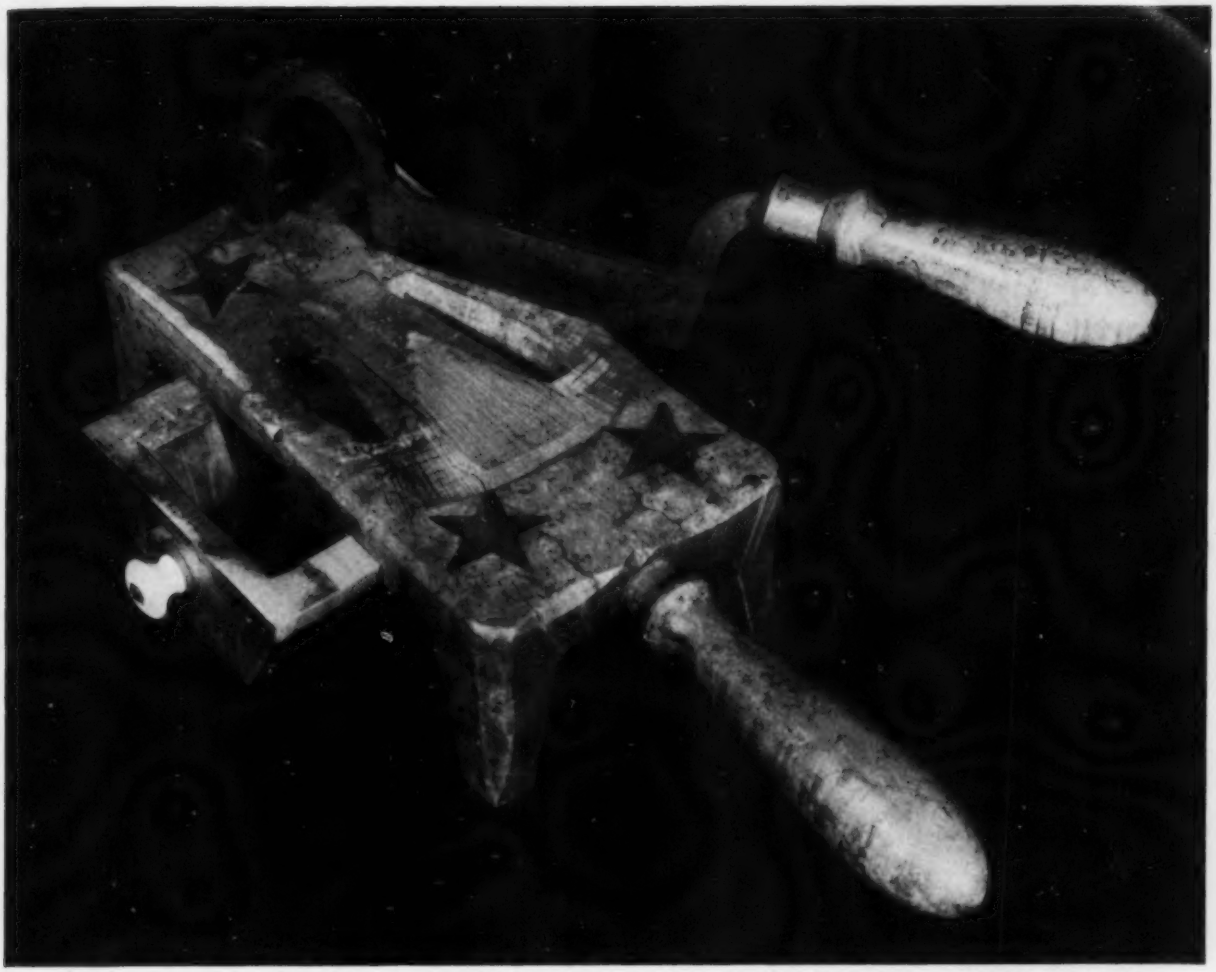
Although samples of almost every wood in the Canadian bush are to be found in the old woodenwares, the early craftsmen had their favourites. Utensils for food and drink required wood that imparted no taste or smell. Birch and basswood (lime) thus qualified but maple was the best all round wood for most work. Most butter-making tools and receptacles were carved or turned from hard maple. No matter for what purpose they were used, bowls found in Ontario are almost invariably of maple, the finest of them of maple burls. Basswood, soft and easily worked, was evidently a popular wood for carving into rectangular troughs.

Such troughs of basswood, pine, cherry or butternut, some of them holding three to four gallons, were standard equipment for catching the sap of the maple tree during the hectic spring sugaring season. The early spiles were tubes, often whittled from basswood. Sap buckets and sap carriers, in fact all the tribe of buckets, keelers, piggins and other containers made of staves, came a little later to Upper Canada. They were more often the products of the full time cooper.

Ash and hickory were also found to be hard, straight-grained woods and were often used for pestles, mashers and pounders. The soft, light wood of white pine was easily carved into paddles and scoops and the shoulder yoke used for carrying two buckets.

Utility was the main consideration in the making of woodenware and little of it is ornamented. The exception is the butter print. Because it made the product more attractive and served to identify his butter at market, a unique design was often carved by the farmer on the face of his prints. Many

Yoke carved from white pine fitted over a person's shoulders. A bucket was hung from each end.



Tobacco cutter is a rare find among old Ontario woodenwares. Tobacco was cut fine by guillotine-type blade, pushed through slot and retrieved from tiny drawer. Body and drawer are hand carved from a block of curly maple. Handles were lathe-turned. Four stars are inlaid.

of the stylized designs of flowers and birds are similar to those found on European butter prints. Certain of them are undoubtedly the hex signs originally applied to protect the butter from evil spirits. Common practice was to turn the print on the lathe and then to carve its design by hand.

The intriguing flair to the handles of many paddles and scoops can be attributed to the selection of wood by the pioneer carver. These handles are often fashioned from a branch or root that had not been cut away from the trunk. The paddle is often a cross section of a tree trunk with its handle a projecting branch.

In this Canadian age of wood, pioneers learnt to satisfy almost every material need from the products of the forest. Some of their utensils were extremely primitive: "A portion of a trunk of a basswood tree about three feet long and two feet in diameter was split in two halves through the centre. One of these was hollowed out as smoothly as possible, to be used as a kneading trough."[2]

Others were most ingenious contrivances: "Even a wooden velocipede was built in the village of Omemee. There were no springs in it, and its handles, pedals, hubs, spokes and wheel rims were all of wood, only the tires being of iron."[3]

This heritage of pioneer craftsmanship is really part of a peasant or cottage craft tradition common to all peoples who have had access to wood as a raw material to satisfy their material needs. The Ontario pioneers designed and fashioned a host of woodenwares to satisfy the peculiar needs of a frontier society in Upper Canada.

[2] Thos. Poole: Early Settlement of Peterborough and Peterborough County, 1867—p. 173.
[3] E. Guillet: Pioneer Arts and Crafts, 1940.

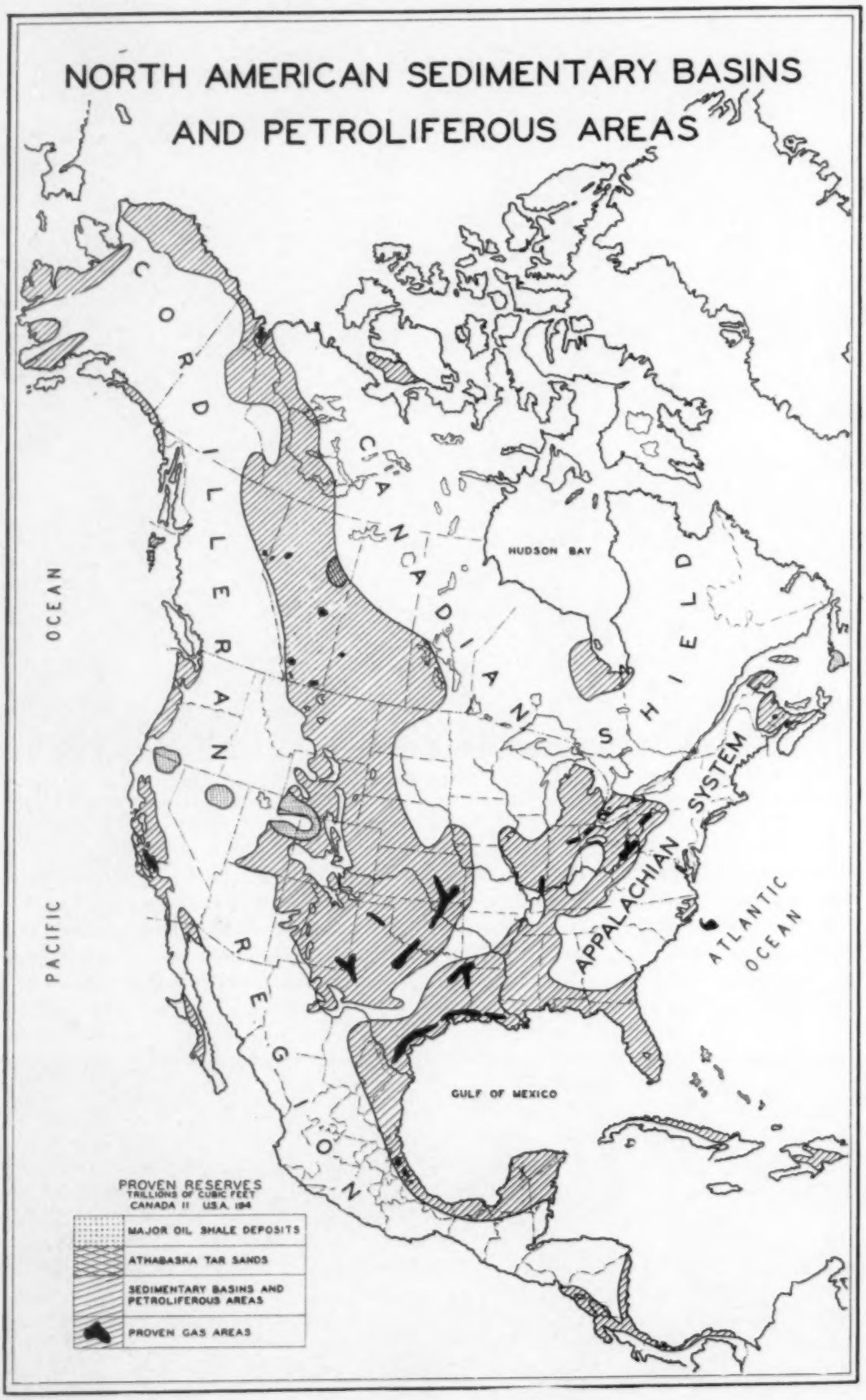

NORTH AMERICAN SEDIMENTARY BASINS
AND PETROLIFEROUS AREAS
CORDILLERAN REGION
CANADIAN SHIELD
HUDSON BAY
APPALACHIAN SYSTEM
ATLANTIC OCEAN
PACIFIC OCEAN
GULF OF MEXICO
PROVEN RESERVES
TRILLIONS OF CUBIC FEET
CANADA 11 U.S.A. 194
MAJOR OIL SHALE DEPOSITS
ATHABASKA TAR SANDS
SEDIMENTARY BASINS AND PETROLIFEROUS AREAS
PROVEN GAS AREAS

Fig. 1

Natural Gas in North America

by JOHN DAVIS

NATURAL GAS, the infant of the North American fuel family of over a decade ago, is today a lusty young giant, its influence now being felt increasingly in homes and factories hundreds and even thousands of miles away from the continent's main producing fields. In Canada, its rise to prominence has been even more recent. But, spurred on by the search for oil in Western Canada and by the almost insatiable demands of Canadian and export markets for this highly desirable fuel, developments in Canada over the next decade promise to rank among the most important in North America.

Once discarded as a nuisance in the oil fields, natural gas is gathered and distributed through elaborate pipeline systems. Now it has reached the point where it provides about one-sixth of North America's energy requirements, having achieved this position largely because it is the cleanest, cheapest, and most convenient of the three principal mineral fuels in many parts of this continent.

The use of natural gas both as a fuel and as a raw material is increasing rapidly. In the early 1920s consumption was still confined to areas close to the gas fields. Since then, a number of things have happened. First, huge fields were discovered in the United States southwest. A little later, satisfactory methods were developed for fabrication on a big scale of large-diameter high-pressure steel pipe. Then, as special construction and pipe laying machinery became available, the building of numerous long distance transmission lines began. As a result, gas is now being transported to centres over two thousand miles from producing wells and transmission lines are fanning out to serve many of the largest fuel consuming areas on this continent.

In recent years, expansion in this industry has been nothing short of spectacular. Consumption of natural gas in North America has nearly tripled since 1940. Furthermore its use as a source of energy has been rising in relative as well as in absolute terms. It has been gaining rapidly on coal ever since 1900 and, at first outdistanced by oil, it is now gaining on liquid fuels as well. Few people realize that during the past thirty years coal production has actually declined in tonnage terms, while the output of liquid

The author makes grateful acknowledgement of the assistance of Mr. J. P. Lounsbury and Mr. D. C. Johnson in the preparation of this material.

TRENDS IN THE CONSUMPTION OF MINERAL FUELS—1900 - 1950 (BY DECADES)

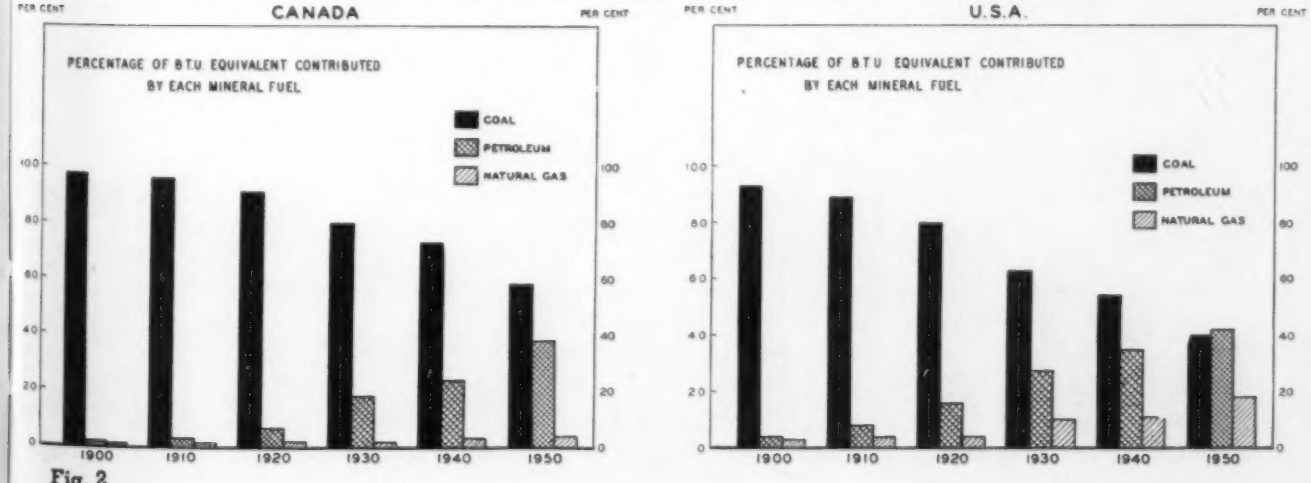


Fig. 2

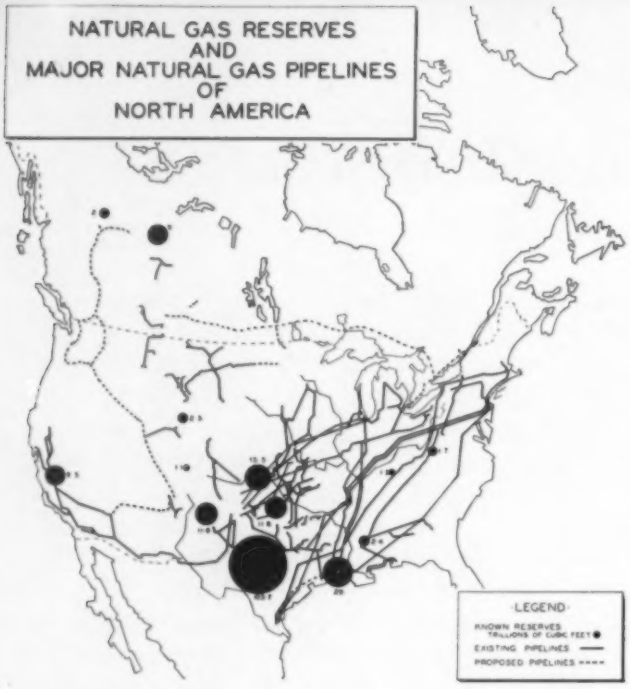


Fig. 3

fuels has increased five times and the production of natural gas has risen seven times over. There are many indications that these trends will continue for another decade at least.

Natural gas is already the cheapest source of energy for many purposes. This is becoming the case in ever widening circles on this continent. Long term contracts are helping to hold its price at or near present levels. At the same time, wage increases will probably tend to bring about upward revisions in the cost of petroleum products and coal—particularly the latter. Natural gas, the production, transmission and distribution of which require fewer man-hours than these other mineral fuels, is, therefore, less vulnerable during periods of inflation. Here is the main reason why the price advantage which natural gas already enjoys in many parts of the United States and Canada is expected to increase as time goes by.

Favourable prices are not the only reason for this versatile commodity being in such demand. Not only are new gas stoves, furnaces, and the like, cheaper than those built to use other fuels, but customers frequently prefer to use gas because their handling and maintenance costs are reduced to a minimum, and because the question of inventories does not arise. In industry, gas is usually the answer where uniform quality and temperature control are essential, and in the home it silently works wonders without the attention and labour often involved with the use of other fuels. Experience has shown too that supplies are rarely jeopardized by labour disputes, and that the fire hazards attending earlier installations have been practically eliminated. With all this in its favour, one is not surprised to find far more customers clamouring to be served than there are pipelines and distribution systems to supply them.

Main Uses

In reviewing the principal trends underlying the growth in demand for natural gas, it should be borne in mind that this product is sold to three main groups of customers; that is to say, household, commercial and industrial users. The first two, while they account for only about 25 per cent of total sales of gas on this continent, pay much higher prices and provide over two-thirds of all the industry's revenues. Industrial users, on the other hand, are by far the most important in volume terms, taking 75 per cent of the total output of North American gas fields.

On an average, household consumers pay about three and a half times and commercial users nearly three times as much as industrial consumers. The latter receive favourable rates not only because of their bulk purchases, but also because they are usually prepared to buy "dump" or surplus gas during off-peak periods on an interruptible basis. Industry, by doing this, helps to keep transmission lines and distribution systems operating at or near capacity levels.

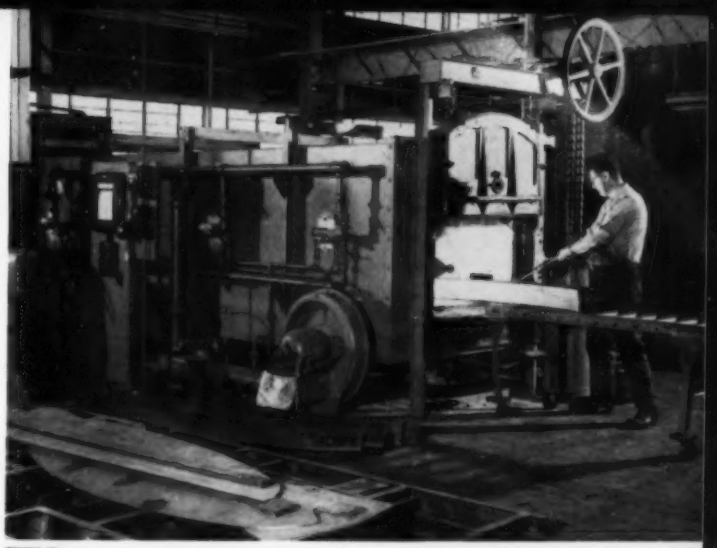
The household and commercial markets for natural gas usually constitute the financial backbone of most pipeline and distribution systems. Indeed, few long distance pipelines have been built to serve industrial markets exclusively. On the other hand, the highly seasonal nature of household and commercial sales usually results in lines having to be operated over extended periods at unfavourable load factors. Thus it is

the more highly industrialized communities which offer the most diversified and therefore the most profitable outlets for natural gas.

For many years there has been little change in the relative quantities sold for household, commercial and industrial purposes. The only exception was in the early 1930s when industrial consumption showed a tendency to level off. More than anything else this illustrates the greater sensitivity of industrial consumption to changes in general economic conditions. Household and domestic demands, on the other hand, have had a moderating effect, tending as they do to maintain continuity in the sales of this product.

Among industrial uses, gas and oil field operations are still the most important. Included in this category is gas used for drilling and pumping, as well as gas lost during "oil lift" operations (gas which is pumped into the casing of oil wells to help raise oil to the surface). The relative quantities used in the field have been declining for many years. Better conservation practice and recent developments in petroleum reservoir engineering have been largely responsible for this. But, even in 1950, this still accounted for approximately 20 per cent of the total North American output.

The next largest industrial user is the electric power utility industry. Indeed, in 1950 this outlet accounted for nearly 10 per cent of total consumption in North America. Here again most of the gas is consumed close to the main supply areas. Transported over considerable distances it becomes too expensive to be used in the continuous firing of steam boilers. As may eventually be the case in Eastern Canada, the gas cannot be laid down on a year-round basis at prices competitive with the cheaper grades of steam coal. However, there are exceptions. In certain cities remote from the producing fields, gas has at times been supplied for electric power generation on a seasonally



Natural gas is widely used in Western Canada and is liked because of its cleanliness, ease of control and cheapness. Pictures show (top to bottom) a typical installation in an industrial forging furnace; home use, where it operates refrigerators, water heaters, furnaces and ranges; and cooking facilities in a commercial establishment.

Union Gas Co. of Canada, Chatham

WHOLESALE PRICE TRENDS FOR COMPETITIVE FUELS IN THE UNITED STATES

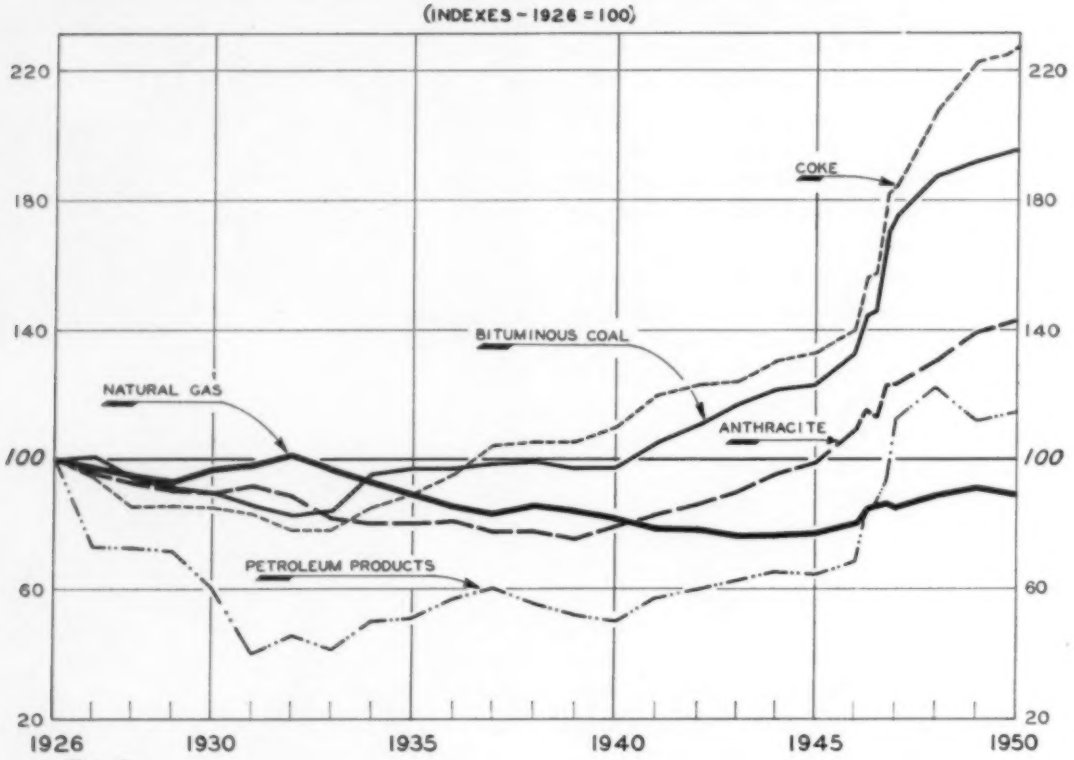


Fig. 4a

CONSUMPTION OF NATURAL GAS IN THE UNITED STATES BY USES. 1920-1950

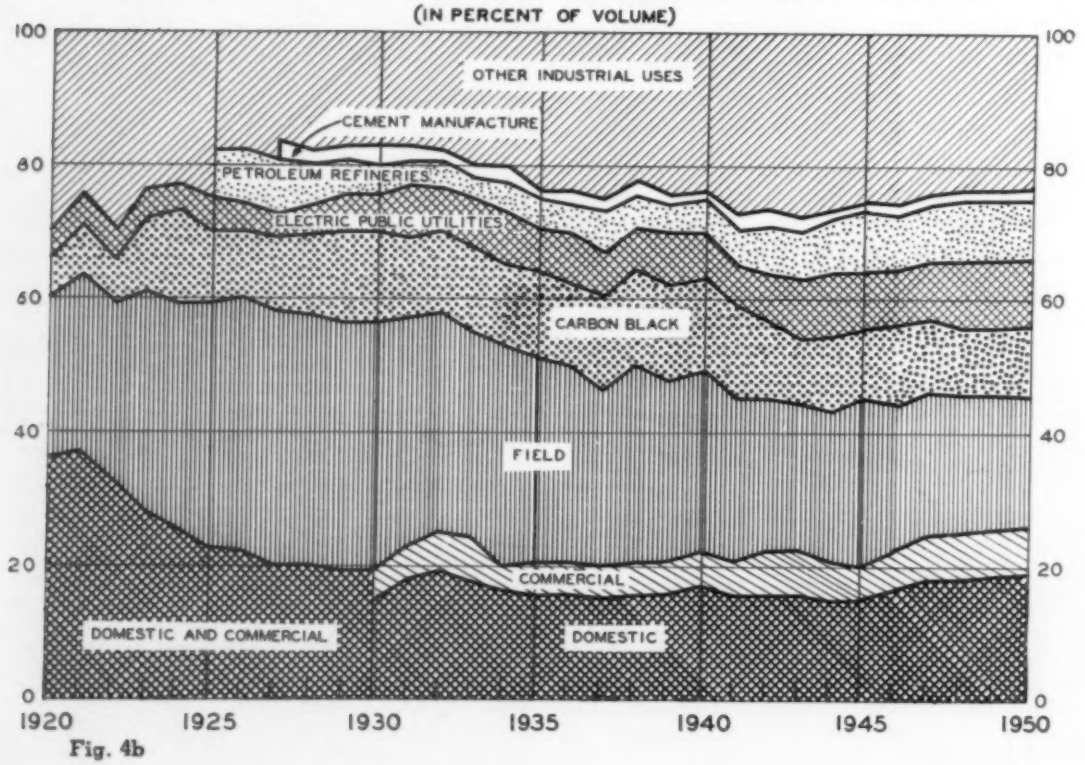


Fig. 4b

interruptible basis involving specially low rates.

With the development of petroleum "cracking" and chemical refining techniques, the fuel requirements of oil refineries themselves have increased substantially. As a result, the refineries now use over 7 per cent of the total gas marketed in the United States. Those located near the fields have frequently turned to natural gas when it was available at attractive prices. Another important factor regulating oil refinery consumption has been the growth of the petro-chemical industry. Gas is now used extensively as a substitute for the light oil fractions drawn off from the refineries for sale to nearby chemical plants.

The carbon black industry[1], despite increasing field prices and the growing use of heavy crude oil as a raw material, also accounts for approximately 7 per cent of all the gas marketed in the United States. This industry is quite different from most others using natural gas. For one thing, it is quite wasteful, average yields tending to be much lower than for other manufacturing processes. Besides, the accompanying smoke nuisance dictates that the plants should be well removed from the main centres of population. These considerations together with the fact that its product is relatively light and does not cost much to transport have caused most carbon black firms to locate alongside those producing fields barred by distance or by the quality of their gas from participating in the main transmission and distributing systems.

Cement manufacturers consume about one-fifth of the amount taken by the petroleum refineries, the principal gas-producing areas already providing an important outlet for this new product. Since they can frequently schedule their operations for periods when other pipeline demands are low, cement plants are frequently able to obtain advantageous rates, while, at the same time, helping to iron out seasonal fluctuations in sales of the gas companies. During periods of peak demand for gas, this industry frequently shifts over to coal or oil, or shuts down for overhauls.

Numerous other manufacturing industries are becoming important users of natural gas. In descending order of magnitude, they are manufacturers of chemicals, metallurgical products, clay and glass products, processed foods, pulp and paper, and miscellaneous iron and steel products. Here again the principal use of gas is as a boiler fuel or for heat treatment and processing. But unlike the major consuming industries discussed previously, they are frequently to be found in and around the main industrial centres now being served by long distance pipeline.

Regional Developments in the United States

Natural gas is now being marketed in all the principal fuel consuming areas in North America, with the exception of the northern New England States, the Pacific Northwest and Eastern Canada. Pipelines have recently been completed to serve Boston and adjacent markets in New Hampshire and Connecticut. When the remaining markets along the Pacific Coast and Eastern Canada will be

[1] Carbon black, made by an incomplete combustion of natural gas, is used extensively in automobile, truck and aircraft tires, in order to improve their durability. About 95% is now used in this way. The remaining 5% is used in making inks, paints and plastics.

A close-up of a metering station in Lambton County in Southern Ontario.

Union Gas Co. of Canada, Chatham

Production, once under way, interferes very little with farming or any other activity, as the picture at left shows.

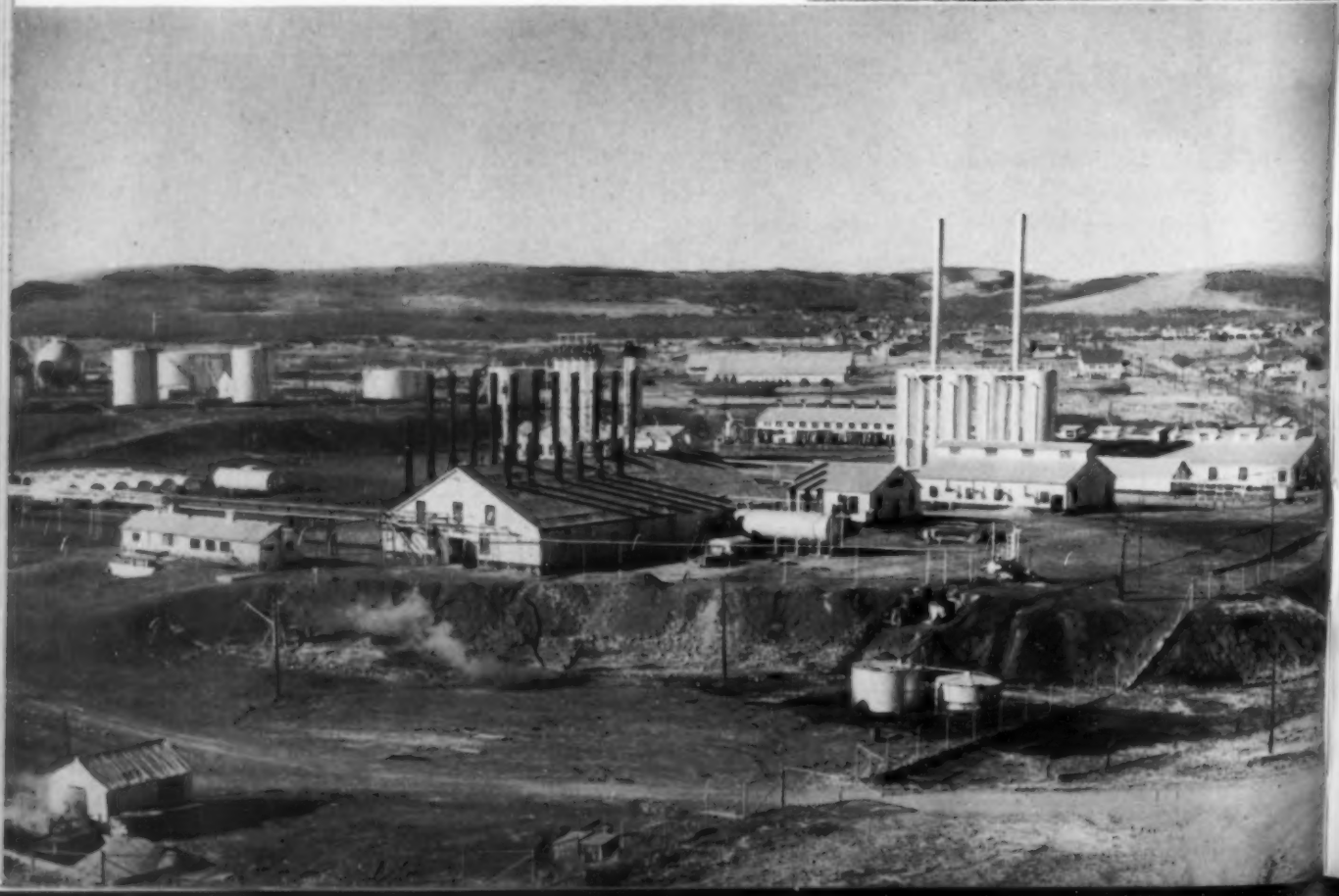
Union Gas Co. of Canada, Chatham

Right:—Blowing out a new gas well in Western Ontario prior to commencing production.

Union Gas Co. of Canada, Chatham

Below:—Prior to entering the pipelines gas from the "wet" field, or gas containing sulphur and other impurities, has to be scrubbed and sometimes compressed as well. The photograph below shows a scrubbing and compressor plant in Turner Valley, Alberta.

Canadian Western Gas Co. Ltd.



served depends largely on the trend in discoveries in the United States, and the proving of additional reserves in Western Canada. However, let us turn first to a consideration of the progress which has already been made in marketing gas throughout this continent.

Natural gas is now beginning to move into the Eastern seaboard of the United States in increasing volume. Ten years ago, this region was regarded as a stronghold of manufactured gas. Today the situation is quite different. Now practically every gas utility on the Atlantic seaboard is making plans to sell mixed gas or to market natural gas directly.

Many eastern utilities are unlikely to go all the way to the straight natural product, however. Among other things, they fear total dependence on long distance pipeline supplies, and conversion costs mounting to millions of dollars. Pipeline promoters, on the other hand, argue that once a company handling manufactured gas introduces natural gas in place of oil as an enriching agent, a progression of events is bound to take place. Cost reductions lead to rate reductions which, in turn, lead to increased demand. The distributing company then discovers that the simplest and most profitable way to meet this expanding market is to step up the heat content of its gas by using a higher proportion of the natural product. This sequence of events has taken place in many markets previously using manufactured gas and now also being served by long distance pipelines.

South from New York along the Eastern seaboard, however, a switch from manufactured all the way to straight natural gas is under way. Washington, D.C., which had formerly used a mixed gas, changed over to natural gas in 1947. Baltimore and Richmond followed suit soon afterwards. New pipelines which are intended to serve the larger centres are bringing about further developments of this kind.

The demand for more natural gas is just as pressing in parts of the country which have used it for years as in virgin market territories. The Appalachian region which includes central and western New York, western Pennsylvania, Kentucky, West Virginia, and Ohio, is a case in point. The natural gas utility industry in this area was built largely in the 1870s and 1880s around the sizable gas reserves in the Appalachian fields. Later, as these began to diminish, it became necessary to pipe in from the newer fields in the southwest. This increasing dependence on distant sources of supply has been accelerated in recent years. However, as in Southern Ontario, these older States have suffered from natural gas shortages during severe winters and factories depending on gas have been shut down and householders forced to conserve fuel.

Lines running into the Middle West were built when construction costs were less than half of what they are today, and when gas in the ground could be bought for a fraction of its present value. Many of the contracts on which they were based are still in effect. The resulting low prices have stimulated demand and severe restrictions on the installation of new gas equipment for space heating have had to be imposed to insure adequate supplies for existing customers. So as to meet these deficiencies several new pipelines have been built from the gulf coast area to serve Detroit, Chicago and the other major consuming centres en route.

Another big utility market for long-distance pipelines is California. In 1950, this state consumed half as much as the entire Mid-West. Because of its long dependence on natural gas for space heating and industrial use, and because of its continuing growth in population and industry, California now has a critical gas shortage. Before World War II, it was supplied from local oil and gas fields. However, no important new local reserves have been discovered in recent years and like many other parts of the United States, California must now depend upon remote sources such as Texas for additional supplies. The first line from Texas to California was completed in 1947.

While more northerly states, such as Montana and Wyoming, are supplied by

In order to ensure a long life, the gas transmission lines are enamelled and wrapped, as is the case in the above operation being carried out near Calgary, Alberta.
Canadian Western Natural Gas Co. Ltd.

Transmission and distribution lines ca usua elements. This involves the use of a grea deal equipment.

local gas fields, the Pacific Northwest is dependent entirely on the manufactured product. Indeed, it is the only large industrial area in the United States which is yet to be served with natural gas. Geographical considerations indicate that Western Canada is its logical source of supply. However, the potentialities of this market have also been sufficient to excite proposals to pipe natural gas all the way from fields along the Texas gulf coast and in New Mexico, both of which are much farther removed from the main centres of consumption in Washington and Oregon.

The following table which records the growth in consumption of the principal gas consuming areas in the United States also gives an idea of their present order of magnitude:

Quantity in Billions of Cubic Feet

Region	1932	1935	1940	1945	1950	1951
New England	—	—	—	—	—	1
Middle Atlantic	95	130	153	186	328	512
South Atlantic	50	64	106	136	214	325
East North Central	136	183	280	394	761	923
East South Central	35	44	77	133	299	337
West South Central	800	963	1,330	2,015	2,722	3,174
West North Central	103	156	222	334	579	680
Mountain	71	86	135	200	365	451
California	264	284	352	502	684	796
Pacific North West	—	—	—	—	—	—
TOTAL	1,554	1,910	2,655	3,900	5,952	7,199

Regional Developments in Canada

To date, the total output of natural gas in Canada has accounted for only a small part of this country's fuel and raw material requirements. Its use is still confined to areas in or near the region of production—that is to say, to central and southern Alberta, a few localities in Saskatchewan, southwestern Ontario, and the immediate vicinity of Moncton, New Brunswick. Indeed, less than 10,000 miles of gathering, transmission and distribution lines are in use in this country, compared to nearly 400,000 miles in the United States.[2]

[2] Over one-third of the U.S. lines have been laid since 1940. At present there are over 160,000 miles of oil lines and nearly 225,000 miles of railroad lines operating there.

usually buried for protection from the deal of heavy and highly specialized
Northwestern Utilities Ltd., Edmonton

Recently a transmission line was laid up the valley of the Bow River to the cement plant at Exshaw and the town of Banff. The fuel is useful for tourist trade as well as heavy industry.
Canadian Western Natural Gas Co. Ltd.

It now appears that the period of purely local or limited regional use of Western Canada's gas reserves is coming to an end. In fact it is quite likely that, before many years have passed, natural gas will provide a much larger share of the nation's energy requirements than it has done in the past. But, before examining what the future may hold in terms of long distance transmission lines and the industrial developments which can be expected to accompany their construction, let us turn briefly to review the background and current situation in this Canadian industry.

Southern Ontario

Much of the natural gas which is still being used in Ontario is being drawn from fields in the southwestern portion of the province (see map, Fig. 5). These fields, which are generally more widespread than those producing oil, border on Lake Erie. Geological structures in which gas is found there, appear to be extensions of similar gas-bearing formations paralleling the Appalachian Mountains in the United States. Available drilling records and other geological data indicate a definite Northern limit to these occurrences[3]. However, additional pockets of gas are known to exist to the south along the shore line, and these may well continue out under Lake Erie.

This gas, which was being marketed as early as the 1880s, and at one time was being sold in the United States, is still being distributed over distances of 150 miles to centres such as Sarnia, Windsor, Chatham, London, Hamilton and Niagara Falls. However, output has declined in recent years, and despite fairly sizable imports from the United States in the summer time, it has been necessary to restrict the use of gas for industrial purposes.

Imports from the United States have been entering Southern Ontario since 1929, but since the war they have been coming in, in much greater volume. While this gas is only available when it is in surplus supply in the Detroit area, it now accounts for about 20 per cent of Eastern Canada's total consumption. It comes from Texas, entering the Southern Ontario distribution grid in the summertime, being compressed and stored in old fields[4] for the purpose of augmenting normal production during the winter months.

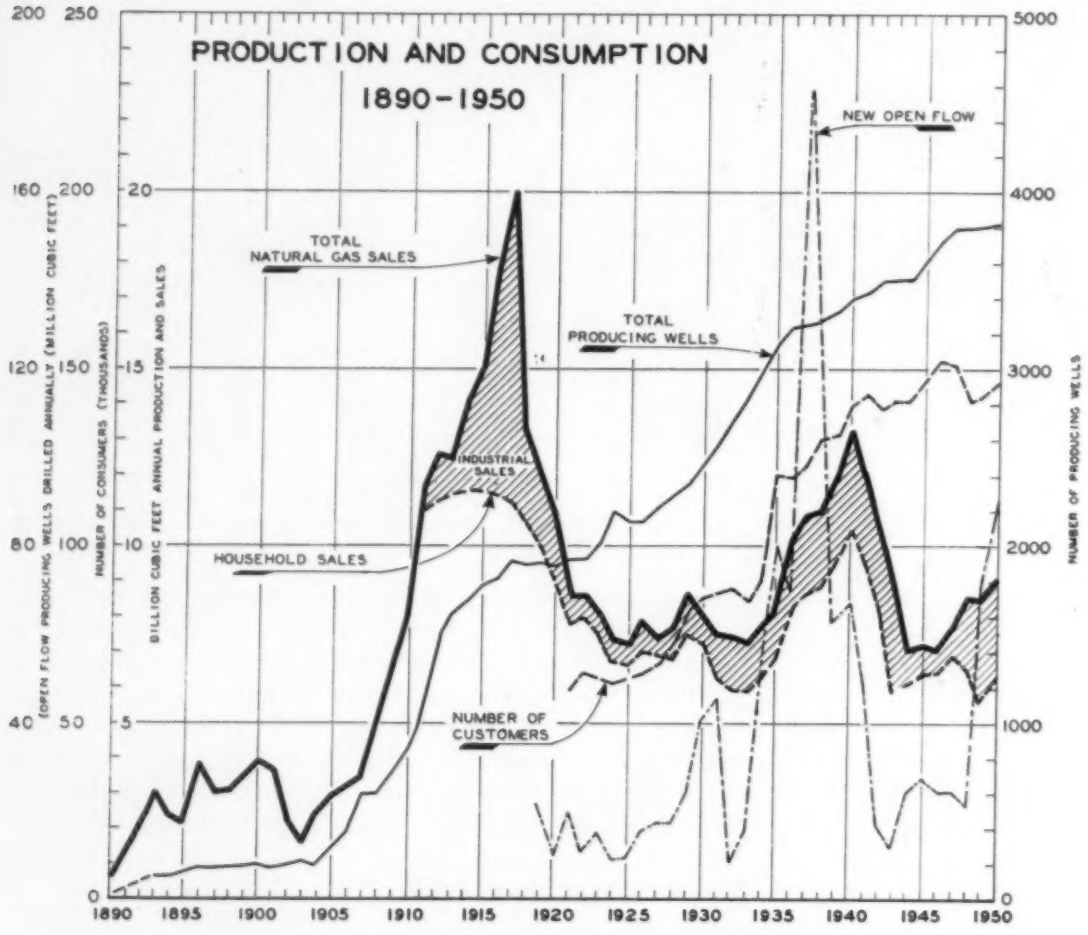
Alberta

As in the case of oil, this Canadian industry is now becoming centred in Alberta, with this province already producing over

[3] The Precambrian Shield, the southern limit of which runs from Georgian Bay to the St. Lawrence River near Kingston, contains no structures suitable for the occurrence of either oil or gas.

[4] The storage of gas in abandoned wells was first accomplished on a commercial scale in Southern Ontario.

NATURAL GAS INDUSTRY IN ONTARIO



LOCATION OF PRODUCING GAS FIELDS AND PIPE LINES

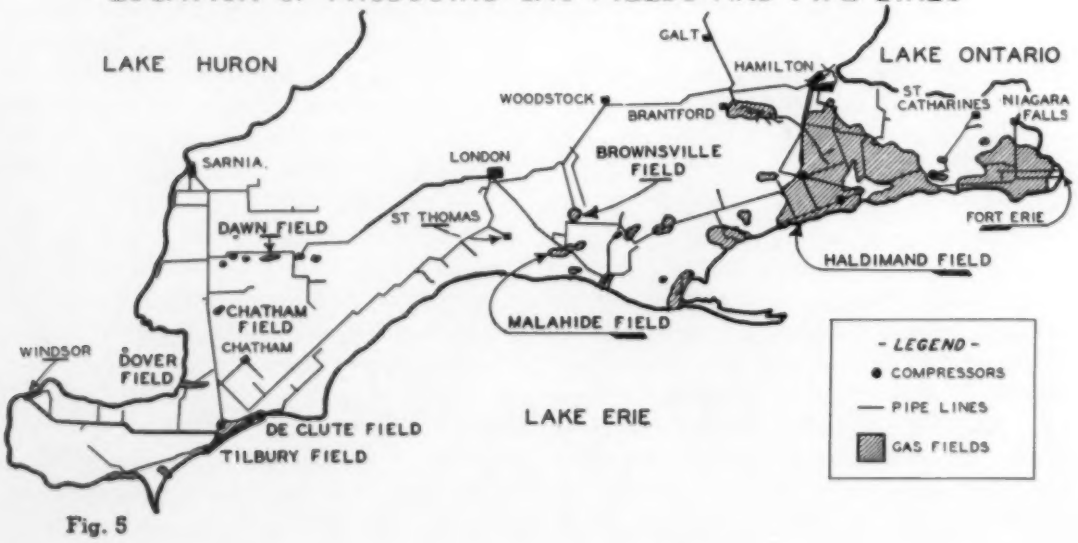


Fig. 5

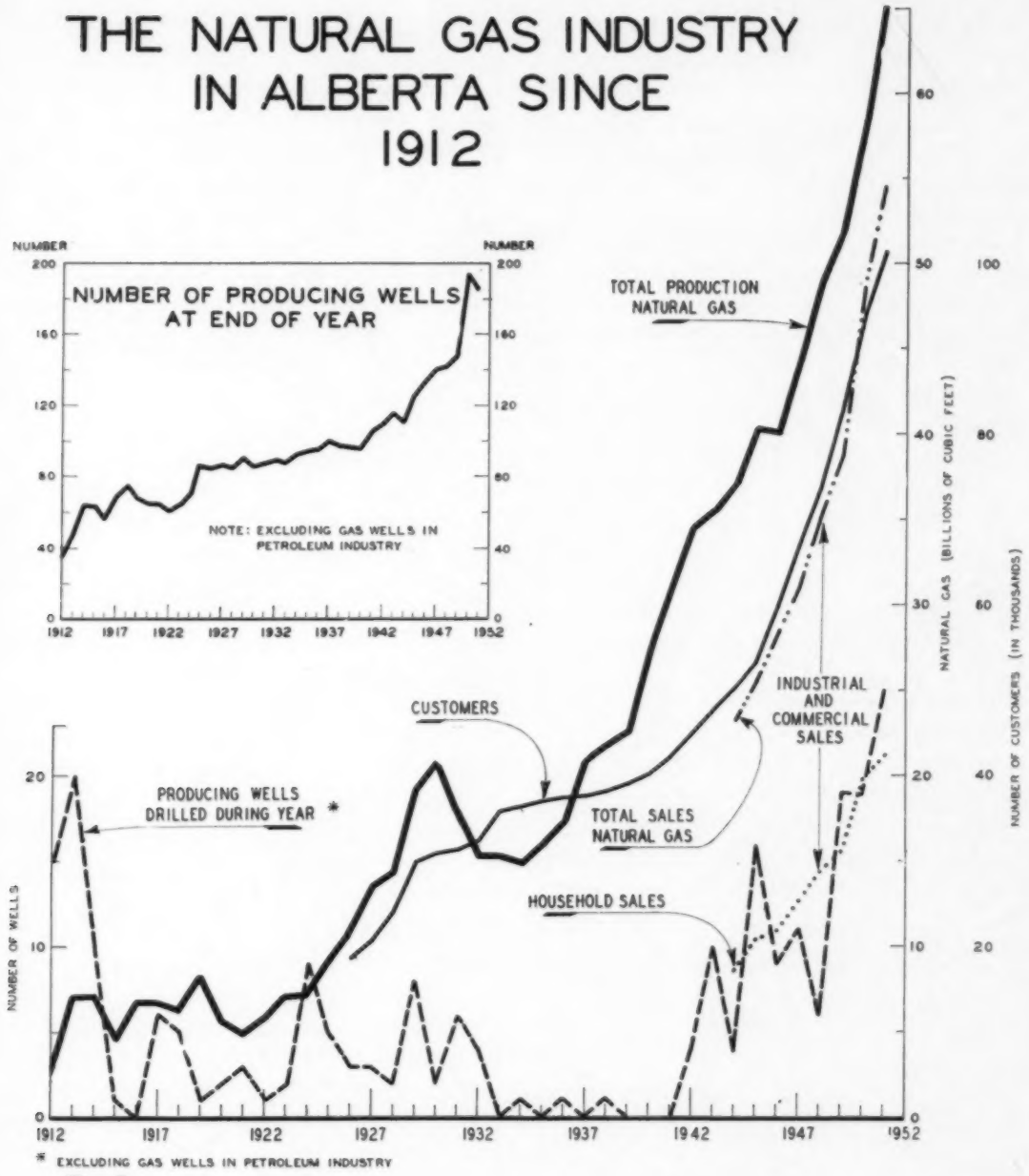

THE NATURAL GAS INDUSTRY IN ALBERTA SINCE 1912
NUMBER OF PRODUCING WELLS AT END OF YEAR
NOTE: EXCLUDING GAS WELLS IN PETROLEUM INDUSTRY
NUMBER
NUMBER
TOTAL PRODUCTION NATURAL GAS
CUSTOMERS
INDUSTRIAL AND COMMERCIAL SALES
PRODUCING WELLS DRILLED DURING YEAR *
TOTAL SALES NATURAL GAS
HOUSEHOLD SALES
NUMBER OF WELLS
NATURAL GAS (BILLIONS OF CUBIC FEET)
NUMBER OF CUSTOMERS (IN THOUSANDS)
* EXCLUDING GAS WELLS IN PETROLEUM INDUSTRY

Fig. 6

80 per cent of all the natural gas used in Canada, and possessing reserves many times those discovered elsewhere in this country. In direct contrast to Ontario, where known reserves are barely adequate to meet existing contracts, reserves and output are mounting steadily, and industrial and commercial users in Alberta have no worries as far as future availability is concerned.

The natural gas industry is still largely confined to the southern half of the province (see map, Fig. 7). The known fields which are more scattered than those producing oil are found in the foothills region of the Rockies and out on the Great Plains, all the way from the International Boundary to the Peace River district. Available drilling records and other geological data have not as yet indicated any eastern or northern limit to these discoveries[5].

[5] Other than that imposed by the Canadian Shield.

At the present time the Turner Valley supplies about a third of the gas consumed in Alberta. Along with the new pool at Jumping Pound, it serves Calgary, Lethbridge, and a number of other communities in the southern part of the province. Edmonton is supplied principally by the Viking Kinsella field, still the second largest gas producing area in the province.[6] Towns as far south as Red Deer also draw gas from this source. The principal other centres in the province have not had to tie into the main distribution lines, since they are served from wells located in their immediate vicinity.

The discovery of gas in Alberta dates back to 1884 and commercial production to about 1904. In the latter year, supplies of gas were first drawn from shallow wells at Medicine Hat. In 1909, the Bow Island field was discovered and three years later a 170-mile, 16-inch line was built to pipe natural gas to Calgary[7]. Gas had been detected in the Turner Valley at a very early date but the discovery well was not drilled until 1913. Extensive development in Turner Valley did not begin until 1934 when oil was discovered there. Dry gas was found in the Viking area in 1914 and transmission to Edmonton commenced in 1923.

NATURAL GAS FIELDS AND PIPELINES IN ALBERTA

Fig. 7

After 1927, the situation in Alberta was dominated by Turner Valley; first as a gas-condensate and later as a crude oil field. During the mid-1930s, drilling operations declined. Production was then greatly in excess of market requirements. At least one trillion cubic feet are estimated to have been wasted by flaring it at the well-head. It was not till after the discovery of oil that voluntary conservation practices and measures enforced by the Alberta Petroleum and Natural Gas Conservation Board served to reduce wasteful withdrawals from this field.

The discovery of crude oil in 1936 gave considerable impetus to drilling activity and other wells were found along the foothills of the Rockies. However, production of crude oil in Turner Valley began to decline during World War II, and the search for petroleum turned elsewhere. Fields, such as those at Suffield, Princess-Patricia, Pouce Coupe, Pend d'Oreille, Black Butte and Jumping Pound near Calgary, were discovered between 1940 and 1946. Exploration, although initially aimed at finding oil, was continued with natural gas as the primary objective.

In view of the local crude oil situation the synthesis of gasoline from natural gas appeared to be a possible alternative, and production on a large scale was under active consideration. Crude oil discoveries, commencing with the Leduc Field in 1947, changed all this. The idea of making liquid fuel synthetically was abandoned, but the impetus provided by the prospect of finding more oil proved to be a boon in another way. Not only were gas supplies augmented by the opening up of a gas conservation plant near the Leduc oil fields but wet and dry gas "finds" began to occur in rapid succession as the search for oil was intensified. Discoveries falling in this category include that of Pincher Creek, which by itself is capable of supplying markets equivalent to over half of the current needs of the United States Pacific Northwest. Other noteworthy occurrences have also been recorded in the general vicinity of Calgary and in several widely separated places in the Peace River district.

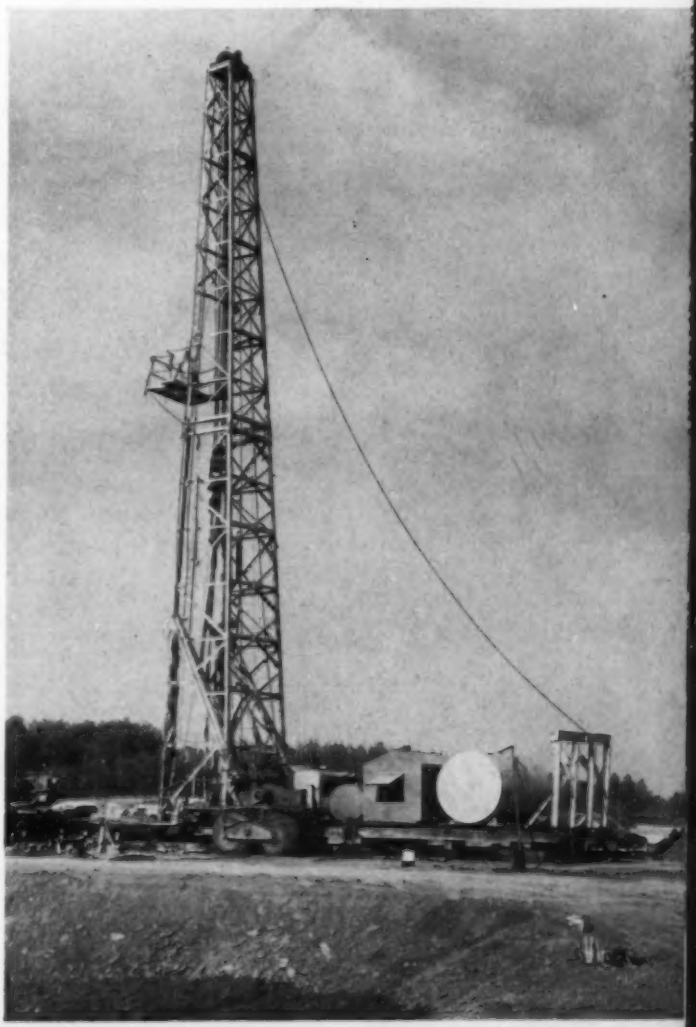
[6] Augmented by gas recovered from the oil operations at nearby Leduc.

[7] At that time, there was only one other line of similar length in the world; a 185 mile, 16 inch line in Louisiana.

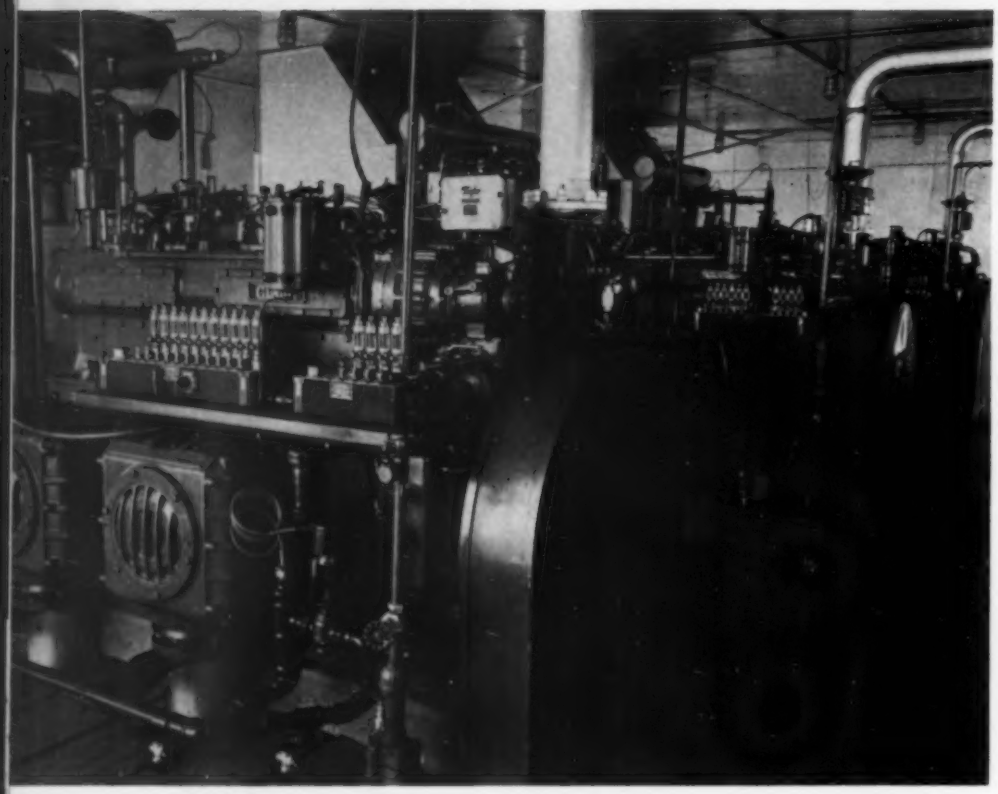
Petrochemicals such as polythene, used largely as a packaging and coating material, are being produced in modern factories like the above plant being built just east of Edmonton, Alberta.
Ransom Photographers

Other Parts of Canada

Production in Western Canada is by no means confined to Alberta. Fields in the Lloydminster area of Saskatchewan have, for a decade or more, been supplying nearby towns in that province. And now, with major discoveries being outlined at Lone Lake, Unity, Kamsack, and the Brock and Coleville areas, production is about to commence there as well. As a result, one of the fond hopes of Canada's major wheat provinces is about to be realized. Plans are well advanced to build a main transmission line at least as far as the city of Saskatoon. Other developments, furthermore, are likely to follow in its wake, with centres such as Regina and perhaps even Prince Albert undoubtedly benefitting in the long run from the accelerated oil and gas exploration and development program presently being carried out in the west, central and southern parts of that province.



Drilling in search of natural gas with a typical rig, in Western Canada.
Northwestern Utilities Ltd., Edmonton



Part of the interior of one of the smaller line compressor stations in Western Canada.
J. O. A. Peets

The following summary statistics indicate, perhaps better than anything else, the relative importance and impressive rate of sales growth in Canada's three main gas consuming provinces: (See table below)

Proved and Probable Reserves

We have reviewed in summary fashion consumption trends and the development up to the present of regional markets for natural gas in the United States and Canada. They tell an impressive story. Indeed, as one traces the growth in gas sales, one soon begins to wonder whether there will be adequate supplies in the future to look after these burgeoning demands.

Producing States have been watching with mounting concern the laying of large diameter transmission lines out across their borders. Despite the fact that these lines are being looped and paralleled by entirely new ones, they have barely scratched the surface where major markets such as New York are concerned. How long this can go on without seriously endangering the reserves position on this continent remains a matter of conjecture. However, one thing is certain; regulatory bodies at the state, provincial and federal levels in the United States and Canada are bound to become increasingly conscious of the need to protect their home consumers first, and to make their gas available to others only when they are sure that it is surplus to their own foreseeable requirements.

This growing attitude is exemplified, not only in Alberta, but also in the lush producing States such as Texas and Oklahoma. They, too, are reviewing carefully the application of every pipeline company which proposed to take natural gas out of their State, and they, too, are insisting that

Quantity in Billions of Cubic Feet [1]

Province	1930	1935	1940	1945	1950	1951	1952
Alberta	20.7	16.1	27.5	40.4	58.4	65.7	80.0[2]
Saskatchewan	—	0.1	0.1	0.2	0.5	0.5	1.0
Ontario	8.0	8.2	13.1	7.2	14.1[3]	15.3[3]	20.7[3]

1 Production except where otherwise noted.
2 Includes exports to U.S.
3 Production plus imports.

reserves sufficient to support each pipeline project must now be firmly established before it is approved.

There have always been "experts" in the industry who were inclined to take a gloomy view, claiming that it was unrealistic to assume that discoveries could ever keep pace with mounting demands for gas. So far, they have been wrong; but despite their miscalculations their ranks have been growing. What does the record really show ?

As with oil, statistics on the industry, while impressive to say the least, are not over alarming. With intensive exploration, proved reserves in the United States have continued to maintain their lead over consumption. Indeed, on a "years of supply" basis, the ratio of proved reserves to production has continued to run around the twenty-five year level ever since 1930. True, it was 31 years in 1946, and in 1951 it was down to 24, but the industry has witnessed this kind of thing before. Using the "years of supply" criterion, it had thirteen years' requirements in sight in 1924, and only fifteen years' supply on hand as late as 1928. Of course, with demands growing as they are, reserves will not be able to keep up with production forever. But it would be a bold forecaster indeed who would be willing to state that the end of the North American reserves is definitely in sight. The remarkable successes which have recently been achieved, not only in the gulf coast region, but also in such widely separated places as Louisiana, Utah and North Dakota give some assurance that the demands of existing pipeline systems can be met for several decades at least.

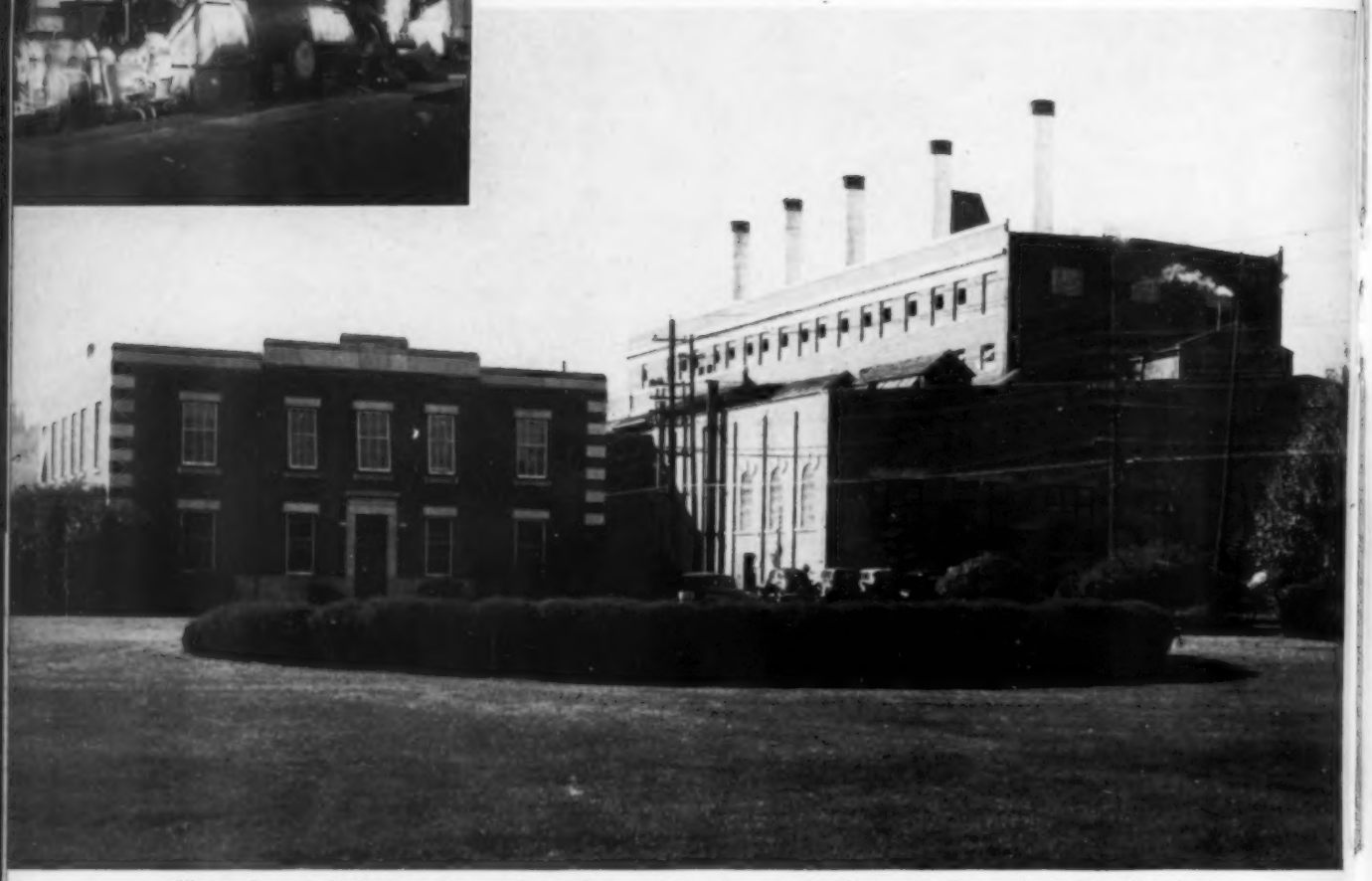
The following table, giving an indication of supply trends in the United States since 1920, lends credence to the view that the existence of sufficiently attractive markets

Quantity in Billions of Cubic Feet

Year	1920	1930	1940	1950	1951
Production	798	1,943	3,331	6,893	7,967
Proved Reserves (Dec. 31)	15,000	46,000	85,000	186,000	194,000
Years of Supply	19	24	26	27	24

Large diameter mains are necessary for the distribution of gas in the bigger cities. These are control valves on an intermediate pressure main being installed at Edmonton, Alberta.
J. O. A. Peets

Northwestern Utilities Ltd., Edmonton.



Natural gas is being used to produce electricity in clean and efficient looking plants like the above.

Many food processing plants already use natural gas in considerable quantity as does the sugar factory shown below in Taber in southern Alberta.

Canadian Western Natural Gas Co., Ltd.

will be a major factor influencing the proving up of gas reserves for some time to come.

Growing demands and better conservation practices are working in the same direction. Both are tending to raise well-head prices and to reduce or even eliminate wasteful practices such as flaring surplus production. As a result, sales are being geared more closely to the industry's overall output with each passing year.

The changing nature of the exploration and development programs is having much the same effect. At one time the bulk of our natural gas reserves was proved up more or less by accident. Gas tended to be a by-product, albeit a necessary one, of the search for oil. Now, numerous firms have resisted the lure of petroleum and are out looking for gas as such. Their chances of finding additional reserves are enhanced by the fact that, of the two, occurrences of natural gas tend to be much more widely dispersed. Add to all this the fact that oil firms, as they drill deeper and deeper into the earth's crust, are more likely to uncover gaseous hydro-carbons, and you have several tangible reasons for being optimistic about the natural gas supply position for another quarter of a century at least.

In Canada the search for natural gas on a really large scale has barely begun. Even today less than a dozen firms are showing a genuine interest in proving up additional supplies in Western Canada. Little wonder, then, that the spectacular results which have already been achieved there have attracted so much attention.

The possibilities of the foothills and western prairie region appear to be very great indeed. Witness the fact that proved reserves in Alberta have skyrocketed since the end of World War II. Starting with an acknowledged 4 trillion cubic feet in 1946, conservative estimates of reserves in that province alone are in the region of 9 trillion cubic feet. Also, over the past eighteen months, at least another 2 trillion cubic feet have been proved up in nearby British Columbia. If this keeps up, sufficient gas to meet the needs of Eastern Canada, the Prairies and the Pacific Northwest will be clearly established before 1955 or 1956.

No official estimates are as yet available of the proved and probable gas reserves of Saskatchewan, Manitoba, or the Northwest Territories. However, geophysical parties and drilling rigs are already very active in these areas, the search for gas in Saskatchewan now being second only to that in Alberta. Numerous discoveries and several major gas pools have already been outlined. These, together with the considerable additions which will accrue as a result of the delineation of what are now referred to as "single well" fields in Alberta and British Columbia will undoubtedly add many trillions of cubic feet to Canada's total.

Taken in relation to Canada's current consumption of natural gas, the supplies already indicated in Western Canada appear

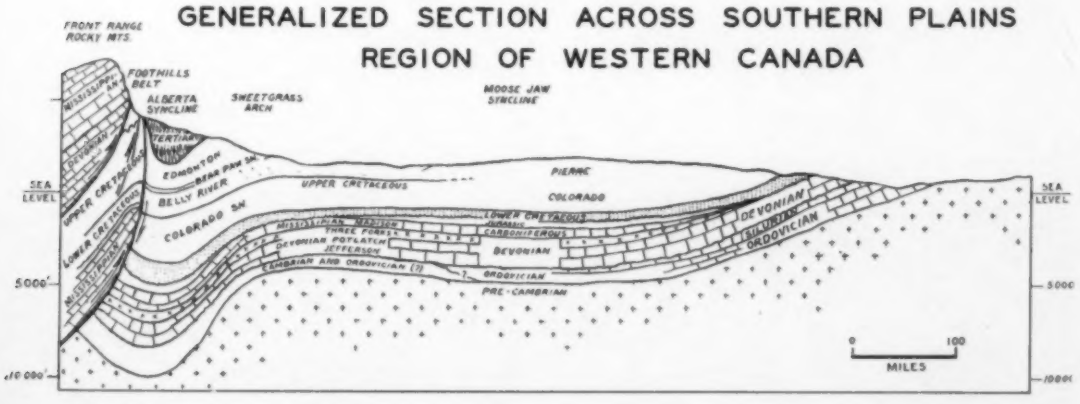


Fig. 8

to be very great. However, as Canada's gas markets are likely to grow by leaps and bounds once the necessary long distance transmission lines are in place, there is little likelihood of exploration activity slackening off. Rather, the situation will probably resemble more and more what we are already witnessing in the United States; namely the piling up of incentives such as annual increases in well-head prices, periodic revision of sales contracts and high profit levels all of which are serving to intensify the search for new and more favourably situated sources of supply there.

Prospective Markets for Canadian Gas

After reviewing the growth of the natural gas industry on this continent, both in terms of its industrial applications and in terms of its established regional markets, one is tempted to let one's imagination take over, and to visualize within a relatively short span of time a continent-wide network of long distance and feeder pipelines, reaching out to serve most of the cities and towns in the United States and Canada. Add to this the likelihood that substantial reserves are likely to be proved up in the prairies, and you have the Canadian industry becoming an important participant in the overall scheme of things. If you like, you can, with some justification, think of the fields in the United States southwest and Western Canada as the main reservoirs, feeding a vast and well integrated heating system, the customers of which will be scattered all the way from California to Quebec, and from Florida to British Columbia.

The part which Canadian sources play will depend, of course, on the success attending the search for natural gas in this country. But a few broad generalizations can be made already in regard to potential markets for Canadian gas. Used as a criterion, American experience indicates that at least fifteen million people lie within economic pipeline distance from the Canadian fields. It is, therefore, most likely that, within a decade, several major gas transmission lines originating in the Western Canadian plains or foothills country will be reaching down through British Columbia into the Western United States, or threading their way eastward to serve the homes and industries of Eastern Canada and possibly adjoining centres in the United States Middle-west.

Gas installation causes temporary inconvenience that calls for a sound public relations program.

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Coronation Court of Claims

by KAY CANNON

TRADITION DIES HARD in the "Heart of Empire"; and in the midst of the vast and complicated Coronation preparations now taking place one is constantly reminded of this fact. It was evidenced in a particularly striking and tangible way last October 31st during the sitting, in the Downing Street Privy Council offices, of the Coronation "Court of Claims".

Here, before a group of eminent commissioners (presided over by the Lord Chancellor, Lord Simonds, and including the Earl Marshal, the Lord Chief Justice and the Master of the Rolls) eminent Q.C.s unrolled pedigrees stretching back to the Norman Conquest, and yellowed parchment deeds of feudal origin. Just what was the purpose of all this flourishing of ancient documents? They were, in fact, produced in support of the claims of those who considered they had official or hereditary rights to perform certain functions at the Coronation, and sought to have them confirmed by the Court.

These services to royalty extend back to the fourteenth century; the first Court of Claims was established in 1377 and presided over by John of Gaunt, who, as Lord High Steward, "sat judicially and kept his court in the White-hall of the King's Palace of Westminster near the King's Chapel before the coronation of Richard II".

In early times many more claims were presented and accepted than today, the decrease being brought about by a gradual curtailment of pageantry. James II did away with the pre-Coronation procession from the Tower to Westminster Hall. And after the abolition of the procession from Westminster Hall to the Abbey, and back to the Hall for a banquet after the ceremony, the services of many people were no longer required. Among the offices to disappear were those of: the "Grand Panneter", who was required "to bear the salt and the kerwing knives from the pantry to the king's dining table, and for this receive the salt cellars, knives and spoons laid before the King at the feast"; the "Chief Lardiner", entitled to receive as fees "the remainder of the mutton, beef, kids, venison, lard, fish, etc., that is left in the larder after the feast"; also the "Chief Butler of England"; the "Waferer"; the "King's Grand Carver" and the "Hereditary Grand Carver of Scotland".

Other past services no longer required were from: the Lord of the Isle of Man, who was bound by his tenure to present two falcons to the King on his Coronation; the Lord of the Manor of Nether Blesington, Kent, who brought three maple cups (this claim was presented last October by Mr. H. R. Boorman "by virtue of the Manor of Nether Bilsington", but rejected); and the Lord of the Manor of Addington, Surrey,

The Lord High Chancellor of Great Britain, Lord Simonds, who presided over the hearings of the Court of Claims.

Part of the King's Procession between Westminster Hall and the Abbey, from an engraving in "The History of the Coronation of the Most High, Most Mighty and Most Excellent Monarch James II", compiled by Francis Sandford, Lancaster Herald, and published in 1687.
Figures shown, according to Sandford's key, are: 1—The Orb, borne by the Duke of Somerset. 2—The Crown, borne by the Duke of Ormond. 3—The Scepter with the Dove, borne by the Duke of Albemarle. A—The Kings Majestie. B—The Bishop of Durham. C—The Bishop of Bath and Wells. D—Four Earls Eldest Sons. E—The Master of the Robes. F—16 Barons of the Cinqueports. G—The Earl of Huntingdon, captain of the Band of Great Pensioners. H—The Duke of Northumberland, Captain of the Guard in Waiting. I—The Vicount Grandison, Captain of the Yeomen of the Guard. K—Gentlemen Pensioners.

who provided *gerout*, or a "mess of pottage".

Originally the Archbishop of Canterbury had to lay claim to his privilege of crowning the King; but this is now unnecessary since William the Conqueror confirmed this right for all time, as well as the Archbishop's "fee" —the purple velvet chair, cushion and footstool which he uses during the ceremony. (This did not, however, mean that his right was never disputed; at the Coronation of Henry I, youngest son of William the Conqueror, the Bishop of Salisbury, jealous of Ralph of Canterbury, pushed the Archbishop out of the way and rammed the crown on Henry's head. Ralph promptly knocked the circlet off with his crozier, giving the king, in so doing, a sharp rap on the cranium!)

The Dean and Chapter of Westminster must still claim their ancient right "to instruct the Queen in the rites and ceremonies and assist the Archbishop of Canterbury, and to retain the robes and ornaments of the Coronation in the vestry of the collegiate church of St. Peter in Westminster, and to have certain allowances and fees". This claim the Court allowed last October, with certain reservations concerning the keeping of the robes and ornaments, and the proviso that fees claimed should "be referred to the pleasure of Her Majesty".

The next claim, that of the Bishop of Durham "to support Her Majesty at the Coronation and to have certain privileges", was also allowed, as was a similar one presented by the Bishop of Bath and Wells.

The Barons of the Cinque Ports claimed their right "to bear a canopy if used in the procession in Westminster Abbey, or if a canopy is not used to be assigned a station within the Abbey in attendance on the Queen . . . ", and the Lord Chancellor pronounced that if Her Majesty wished to have

a canopy in the procession the Barons of the Cinque Ports were entitled to bear it. The reward for services rendered by the Barons to King John was to carry over the king in the Coronation procession a canopy of cloth-of-gold or purple silk ornamented with silver-gilt bells and borne on four staves; since the abandonment of the ceremony in Westminster Hall, they have often had to battle for this ancient right.

The claim was allowed of the Clerk of the Crown "to record the proceedings and to be assigned a suitable place . . . to discharge his duties, and that the Registrar of the Privy Council may be associated with and assistant to the Clerk for this purpose; also to have five yards of scarlet cloth". Since earliest times the Clerk of the Crown has recorded the judgments of the Court of Claims and attended in the Abbey to compile the official record, or "Coronation Roll".

Among other successful claims were those of: the Walker Trustees to be present by deputy "by virtue of the hereditary office of the white rod or principal usher of Scotland"; the Countess of Errol "to take her part by her sufficient deputy . . . as Lord High Constable of Scotland, and to have a silver baton or staff of 12 oz. weight tipped with gold at each end and with Her Majesty's royal arms on one end and the petitioner's on the other end"; Lord Shrewsbury to carry a white wand as "symbol of his hereditary office as Lord High Steward of Ireland"; Lord Cholmondeley "to perform and execute the duties and services of the office of Lord Great Chamberlain"; the Lord Mayor of London to bear the crystal mace; Lord Dudhope, as hereditary royal standard bearer of Scotland, to carry the royal standard of Scotland; Lyon, King of Arms, "to be assigned the usual place in the procession and the ceremony"; and the heralds and pursuivants of Scotland "to be assigned their customary place in the procession".

The claims of Lord Hastings and Lord Churston to carry the "great spurs" were both allowed; and doubtless a great sigh of relief was heaved when it became certain that a third claimant to this right (allowed to only one family up to the twentieth century) was not going to press, and gain, his suit, as happened before the Coronation of George VI.

In all, twenty-one claims were presented, and sixteen approved. One of those which failed aroused considerable interest. The Duke of Newcastle (as Lord of the Manor of Worksop) has since 1756 enjoyed the

An engraving of the Coronation banquet, also from Sandford's book, which is described as follows: "A Prospect of the inside of Westminster Hall. Shewing how the King and Queen, with the Nobility and Others, did Sit at Dinner on the day of the Coronation, 23 April 1685. With the manner of Serving up the First Course of Hot Meat to their Majesties Table . . . Before the Second Course was brought in Sir Charles Dymoke . . . the Kings Champion . . . entered the Hall compleatly armed, in one of His Majesties best suits of White Armour, mounted on a goodly White Horse, richly Caparison'd."

The assembly in Westminster Hall preceding the procession to the Abbey, and the great banquet following the ceremony, were discontinued after the Coronation of George IV in 1821. Many offices for which claims' were put forward then disappeared, for there was no further call for a panneter, lardiner, waferer, or grand carver, and such services.

The King's Champion has thrown down the gauntlet. From an engraving in Harrison's History of London, entitled "Sir John Dimmock performing the Ceremony of the Champion's Challenge at the Coronation of Richard II in Westminster Hall". Though this represents a fourteenth century ceremony, the engraver has contemporized the costumes.

right to provide a scarlet glove for the monarch's right hand, and to support his arm while he holds the sceptre. On this occasion the claim was made by the London and Fort George Land Co. Ltd., which now controls the Manor. The company's claim was deferred for further consideration (and subsequently rejected), the Lord Chancellor saying he doubted whether there was any precedent for a limited company being granted the right to take part in the Coronation ceremony, even though, as in this case, all the shares of the company were held by the family of the Duke of Newcastle.

Another plea rejected was that of Rear Admiral Edward James O'Brien Croker "to act as the Queen's cup and standard bearer." The honour of carrying the Standard of England at Coronations has long been vested in the Dymoke family, and at the forthcoming ceremony Captain J. L. M. Dymoke will bear the Union Standard. This office is granted in lieu of the previous one claimed by hereditary right by the Dymoke family since the fourteenth century—that of acting as King's Champion, a custom brought to England by William the Conqueror. The first recorded appearance of the Champion was at Richard II's Coronation in 1377; his last at George IV's in 1821.

In early times he participated in the procession and made his challenge on the way to the Coronation, as well as after it in Westminster Hall. But the role he played was not always an uneventful one. At the Coronation banquet of George III, for example, the King's Champion exercised his right by riding into Westminster Hall in full armour; and, being a man of considerable forethought, he had taken pains to train his charger to walk backwards on withdrawing from the King's presence. Unfortunately, however, so thorough proved the steed's instruction that it also insisted, despite the promptings of whip and spurs, on backing *into* the royal presence; and to add to its rider's embarrassment, when he threw down his steel gauntlet (a challenge, according to mediaeval tradition, to anyone who denied the king's lawful title to meet him in battle), a dear old lady retrieved and returned it to him, chiding the Champion for his carelessness!

* * *

Gone, alas, are the days of Champions, panneters, waferers and lardiners. But much of the pomp and circumstance, splendour and tradition of former coronations is, nevertheless, still with us—having been upheld and confirmed (and most fittingly so) by the Court of Claims of this, our second Elizabethan Era.

Confederation Chamber Prince Edward Island

by A. E. ARSENAULT

As a colony with separate government, in Canada, Prince Edward Island comes second to Nova Scotia. The first General Legislative Assembly met in 1773, just one hundred years before the Island entered Confederation. During that period the administration sought to solve the problems of government which later confronted the other provinces, and the Island statesmen did what they could to bring about that happy relation between the Colony and the Motherland under which the development of Canada has taken place.

In the year 1864, the first meeting looking towards the Confederation of Canada was held in Charlottetown.

At that time there was no railway connection between New Brunswick and Nova Scotia, nor between New Brunswick and Lower Canada, nor between New Brunswick and the United States. Prince Edward Island had no railway. Both New Brunswick and Nova Scotia had begun the construction of a railway from Saint John on the one end and from Halifax on the other, designed to connect those two provinces, with the prospect of closer political connections and free trade between the Maritime Provinces. And out of this grew correspondence between the three governments initiated by the Government of Nova Scotia.

As a result of this correspondence, delegates were appointed by the three governments to meet at Charlottetown to consider the terms upon which Nova Scotia, New Brunswick and Prince Edward Island might be united as one province in a legislative union.

The delegates from the mainland provinces and from Prince Edward Island were in each case made up of leading members of the respective governments and opposition.

In the meantime, Upper and Lower Canada were at loggerheads. The union of Upper and Lower Canada had not proved a success. Continual difficulties were arising which the leaders of the day were powerless to solve, and government after government went down to defeat without bringing about any beneficial results.

Sir John Macdonald refers to these when he says: "All were alarmed at this state of affairs. We had election after election — we had ministry after ministry — with the same results. Parties were so equally balanced that the vote of one member might decide the fate of an administration."

It was hoped that, with a parliament composed of representatives from other provinces as well, the rivalry between Upper and Lower Canada would disappear and that the government of the country would not be subject to such frequent changes. And this was, so far as Quebec and Ontario were concerned, the great incentive to the confederation of the provinces.

While the Maritime Conference had but begun its work, application was made on behalf of the Government of Canada, which was granted, to receive a delegation of that body to propose a larger federal union of all the provinces.

Never before had there been a meeting of so many eminent statesmen in Canada assembled in one place for a common purpose. Never before nor since has there been so notable a gathering within the narrow bounds of Prince Edward Island. As the meeting was held in camera, no minutes were kept and the speakers were not reported and, with the view of further considering the union of the provinces, it was proposed to hold a further conference at Quebec, and this conference was accordingly held on the 10th October following.

In the grand result as seen in the great and

progressive Canadian Dominion as it is today, the Charlottetown Conference marked a notable date in the history of the North American section of the British Empire.

The delegates to the number of twenty-five sat in the room now called the Confederation Chamber in the Parliament Building. This room has been preserved intact, with the very table around which the delegates sat and the very chairs on which they were seated.

Prince Edward Island was the Cradle of Confederation, and it was fitting that in 1914, the fiftieth anniversary of this notable meeting, a bronze tablet commemorative of the event should have been erected in the very room where the historic Conference was held.

The tablet is allegorical.

In the foreground are the figures of five of the leading statesmen of the time representing the chief industries of the country.

Sir Leonard Tilley holds a scroll on which appears the word "Dominion", for, according to tradition, whilst in London and our representative there, seeking a name that would signify that status of Canada, Sir Leonard Tilley one night opened the Bible and found before him the words "Thy Dominion shall extend from sea to sea and unto the rivers end". He was so struck with these applicable words that next day he suggested the word Dominion to represent Canada — extending as it did from the Atlantic to the Pacific, and from the St. Lawrence to the MacKenzie.

Sir George Cartier holds the torch and the sword of justice, symbolic of the fact that his first professional achievement as a lawyer was the recoding of the laws of his native province.

At the feet of Sir John Macdonald, who grasps the caduceus, are a scythe, a sheaf of wheat and a locomotive, which remind us that as the rails were laid Manitoba joined the Union; British Columbia became a province; the great unsettled prairies were populated; the wheat was sown; then came the harvest, followed by development and prosperity.

Gray (Prince Edward Island) holds the fasces, the provinces bound together and consolidated.

Tupper with the symbols of a pick and a fish, represents the mining and fishing industries of the Maritime Provinces.

On the margin of the plaque are inscribed the names of the delegates. To the right is the figure of the herald with a trumpet proclaiming the event. The inscription reads:

IN THE HEARTS AND MINDS OF THE
DELEGATES WHO ASSEMBLED
IN THIS ROOM ON SEPT. 1ST 1864
WAS BORN THE DOMINION OF CANADA

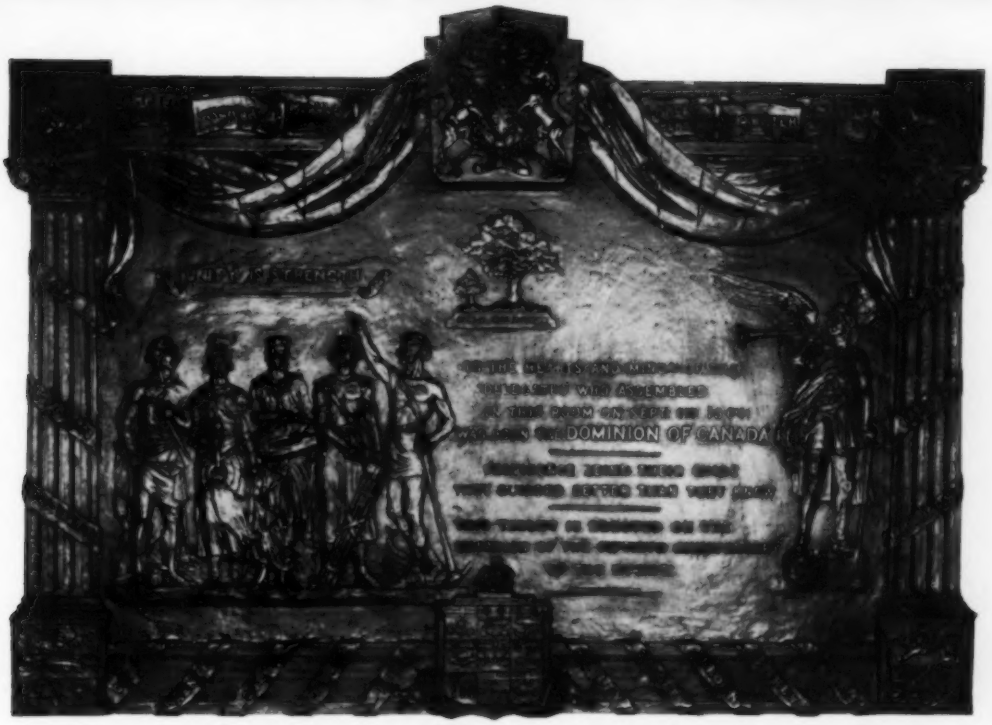
PROVIDENCE BEING THEIR GUIDE
THEY BUILDED BETTER THAN THEY KNEW

The room also contains portraits of all the lieutenant-governors of the province since it became a colony and the pictures of the premiers of Prince Edward Island.

An interesting romance is connected with Walter Paterson the Island's first and only governor, and with Sir Alexander Bannerman, a subsequent lieutenant-governor. Walter Paterson had a daughter, Margaret, who married in Charlottetown a Doctor Alexander Gordon, then stationed there as an Army Surgeon. Margaret was baptized in St. Paul's Anglican Church, Charlottetown, and the baptism is inscribed in the parish register. Dr. Gordon got into financial difficulties, and in 1800 removed to Halifax where he had been appointed to a similar position in the Army.

Three years afterwards, his wife having

Confederation Chamber, formerly the Legislative Council Room, in the Provincial Building, with the table and chairs used at the Charlottetown conference in 1864.



The bronze tablet on the wall of the Confederation Chamber commemorating the 1864 conference.

died, and being practically penniless, he embarked for Scotland to take his two young daughters to an aunt there who had agreed to care for them. On the voyage Doctor Gordon died, but the two daughters were safely delivered to the aunt, who was the widow of the Reverend John Usher. Both girls were adopted by their aunt who managed to obtain a small pension for their support and education.

The daughter Margaret received a good education. She was an apt pupil and delighted in her studies. In 1818 she met a friend of her teacher, a Thomas Carlyle, then quite unknown. Margaret was then nineteen years of age. She was beautiful and accomplished, with deep blue eyes, fair hair and a beautiful figure. Carlyle fell in love with her, and was soon a frequent visitor at her aunt's house.

But Margaret's aunt could see no future in an alliance with an unknown scribbler, and it was not long before Carlyle realized that his visits were not welcome, and so abandoned his suit. Margaret later married Alexander Bannerman, a wealthy Scottish merchant. Bannerman became a member of the House of Commons and was knighted, but through unfortunate circumstances, lost most of his money and eventually accepted the lieutenant-governorship of Prince Edward Island, and Margaret, who had left the province as a penniless child, returned to Prince Edward Island as the first lady.

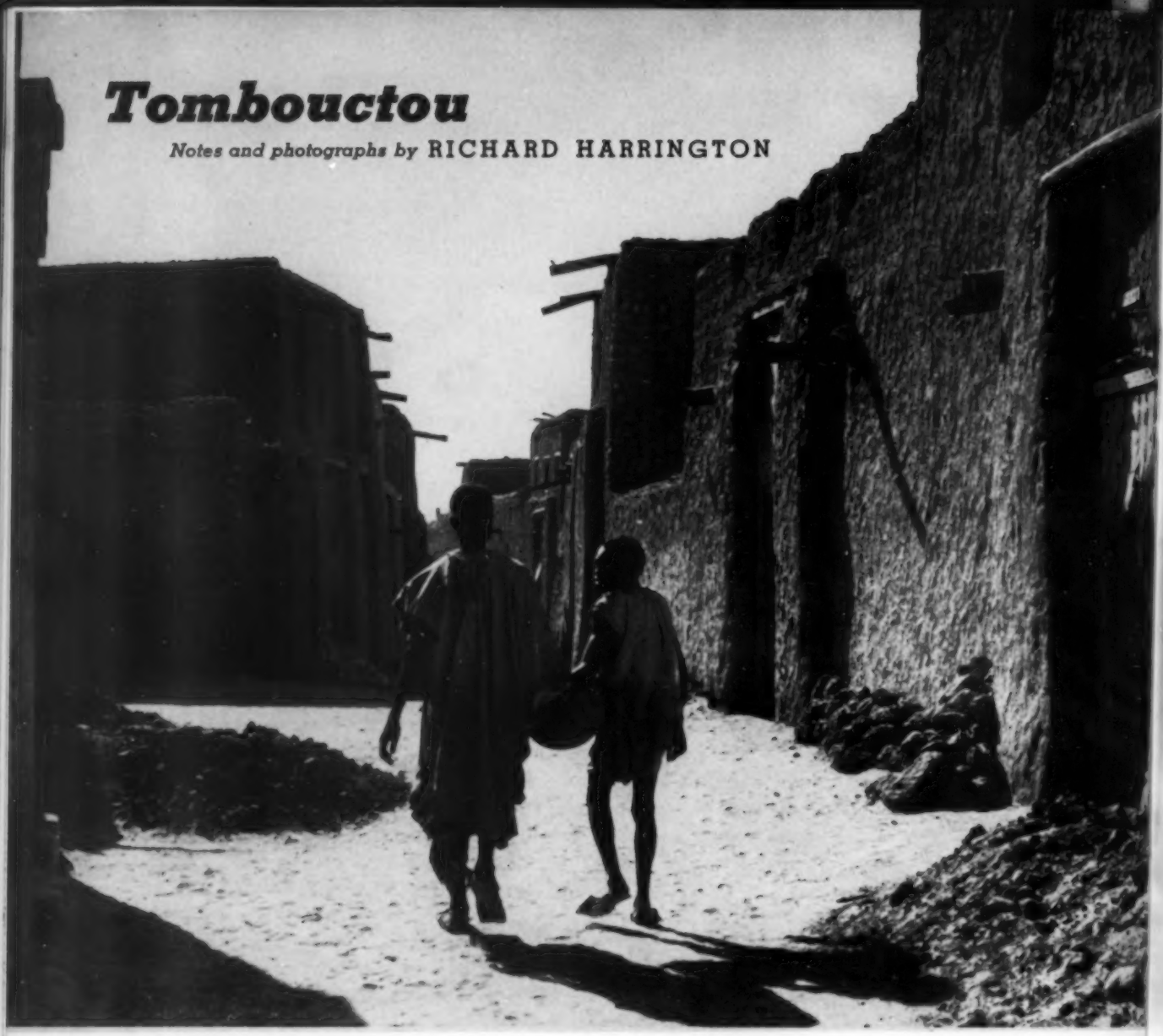
In the meantime, Carlyle became a distinguished author and novelist and wrote *Sartor Resartus*, the heroine of which is Blumine and drawn from life, the original being Margaret Gordon.

Many interesting relics of Confederation and pre-Confederation days are exhibited in the Chamber, and under glass is a very humorous page from the Visitors' Book in 1889 on which occasion Sir John Macdonald revisited this historic room and was asked to register. After writing his name and being puzzled as to what he should put down as his occupation, he turned to Joseph Pope who accompanied him and asked Joseph "What will I write as my occupation ?" And, without waiting for an answer, inscribed "Cabinet Maker".

Although the Island is small and her voice is weak in the Council of the great Dominion, she is proud of having had a large share in bringing about the Confederation of the provinces of Canada which has made Canada the great nation it is today.

Tombouctou

Notes and photographs by RICHARD HARRINGTON



THE CROSSROADS OF THE SUDAN

THE NIGER RIVER rises in the mountains of French Guinea, flows northward, then makes a great bend to flow south into the Gulf of Guinea.

Near the "buckle", in French Sudan, stands the fabulous city of Tombouctou (Timbuktu), the epitome of faraway legendary places. Because of its proximity to the Niger, with which it is connected by a dead-end channel, Tombouctou has been called "the port of the Sudan".

Centuries ago, it had an even more glorious name. When Columbus set out to find

America, this was the centre of a Negro Moslem empire which lasted for hundreds of years. It was a seat of learning and culture and prosperity, for it stood at the crossroads of the Sudan, the place "where canoe meets camel". Traffic from east and west and from the forested south converged on Tombouctou to flow north to the oases of the Sahara. Salt from the desert mines came south.

Not only was there the wealth of the commercial trade, but Tombouctou attracted scholars from the known world. It deserved its title "Queen of the Sudan" in those days. Learned men from Arabia, Egypt, and Mesopotamia brought their treasured manuscripts to teach the sons of kings and nobles who came from equally distant places. Some of the famous manuscripts remain, and are Tombouctou's chief treasure today.

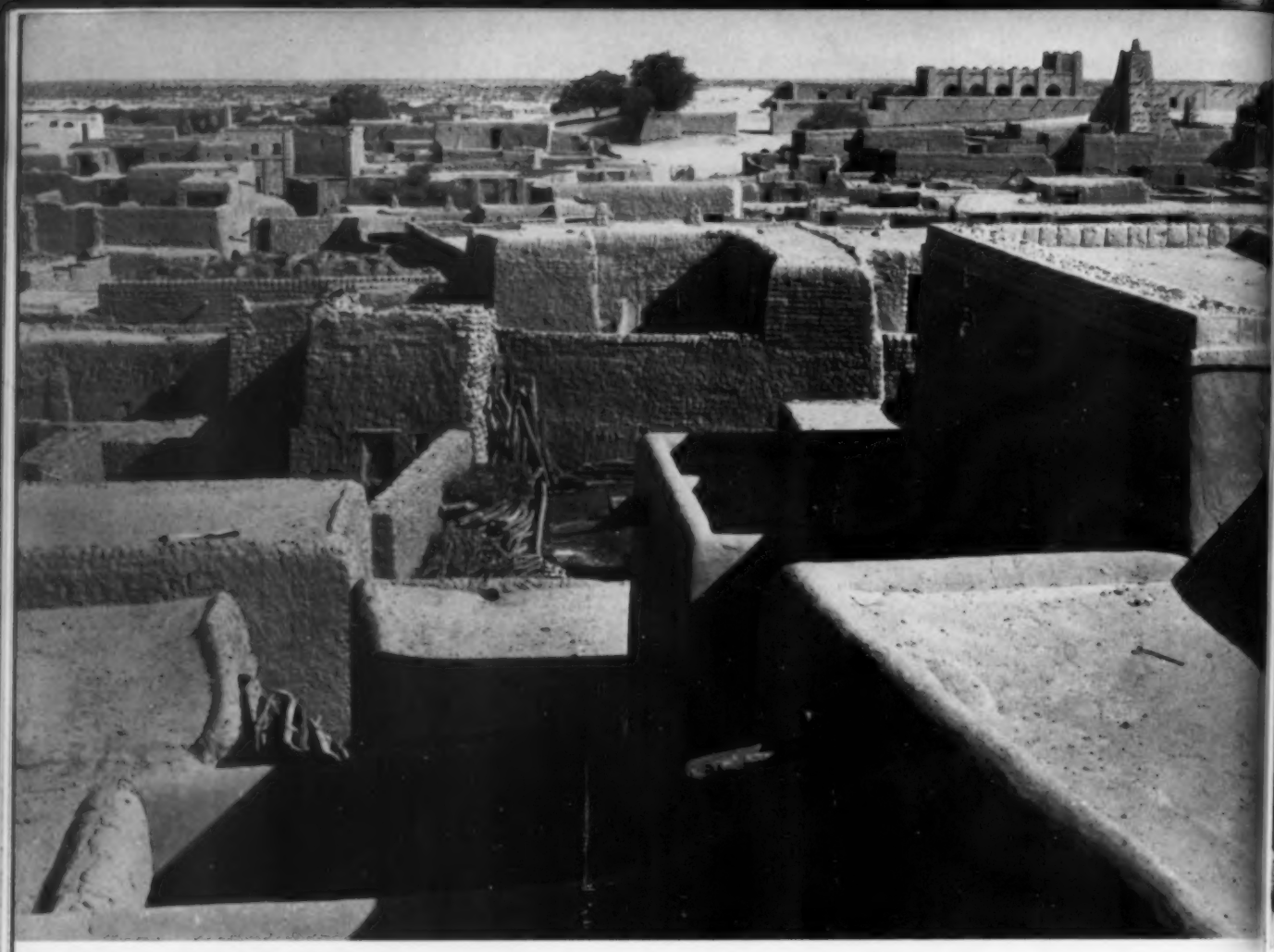
Tombouctou came into existence about A.D. 1100 as a winter dwelling of the Tuaregs, those veiled nomads of the Sahara Desert. Although the fine yellow sand blew then as it does still, the desert people found good pasturage for their flocks in the marshy region of the Niger. Today water from the channel is used to irrigate garden patches which produce a surprisingly lush growth of tomatoes, carrots, lettuce, cereals and some tobacco.

At its zenith about 1500, in the reign of Askia the Great, Tombouctou had a thriving trade in gold, hides, ivory and slaves. Then, camel caravans ten thousand strong gathered there to trade and to fetch salt from the mines in the centre of the desert. Today the population has shrunk to seven thousand, and the camel trains, which still arrive in March and September, have dwindled to three or four thousand. With the gathering of the traders the old city wakes from its lethargy to the pad of camels' feet the shouts of the drivers, the bargaining in the marketplaces.

Even the ordinary market days are colourful and lively. The haughty Tuaregs, their aquiline features partially concealed behind veils, swagger through the sandy twisting streets. Moors and Sudanese and the blacker Bellahs hustle past on bare or sandalled feet,

Windows have no panes, but the framework, set in two-foot-thick walls, is ornately carved.

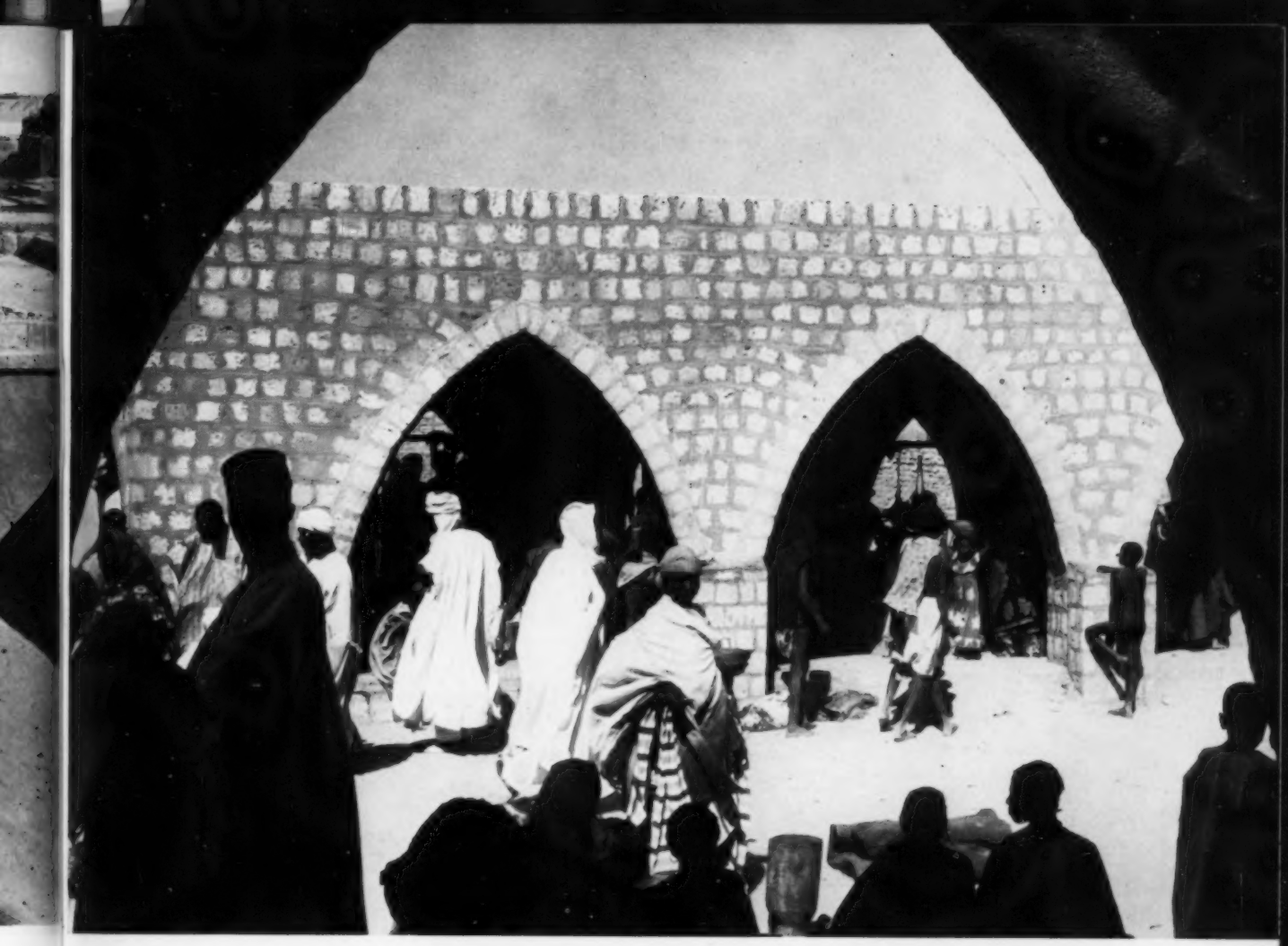
Doors in Tombouctou are either a bull's hide flap or a stout wooden slab studded with metal, or sometimes both. A Musselman guide in sunglasses knocks on the house where René Caillié lived for two weeks in 1828.



The ancient city of Tombouctou is a series of flattened blocks—buildings of sun-dried mud bricks surmounted by low parapets. Projecting gutters carry water from the roofs. Buildings crumble in the ceaseless desert wind and in the rainy season and require constant renovation. The mosque (close-up at left) bristles with exposed wooden beams. The thorny expanse beyond the city (above) is called 'the Forest of Kabara'.

or pause for long, flowery Moslem salutations. Piles of garish pottery, metalwork of many kinds, beautifully tooled leather, woven goods, ostrich eggs, fruit and sheep are the main items for sale.

Three mosques stand quiet, except when the muezzin at sunrise and sunset calls the Faithful to prayer. From a minaret, one can look over the city, with its low flat-roofed houses, walled courtyards, and open squares where the occasional mimosa trees spread welcome shade. Here and there throughout the town are outdoor ovens, beehive in



One of the market places is built of stone and concrete. It was formerly a slave market. Now the people of Tombouctou bring to it their agricultural produce, their handicrafts, and livestock.

Bales of wool from flocks of desert sheep are carried to town in panniers on donkeys' backs. Hides, rolled up in bundles, are also carried.

Native weaving is usually done in narrow strips which are then whipped together at the selvage. This workman anchors the material with his toe.

A leader of the meharists, the famous camel patrol of the Sudan, this Moor is kindly and courteous in conversation. He sits on a wooden seat on his steed, which wears its camel corps serial number on its neck.

shape, standing at the street corners for public use.

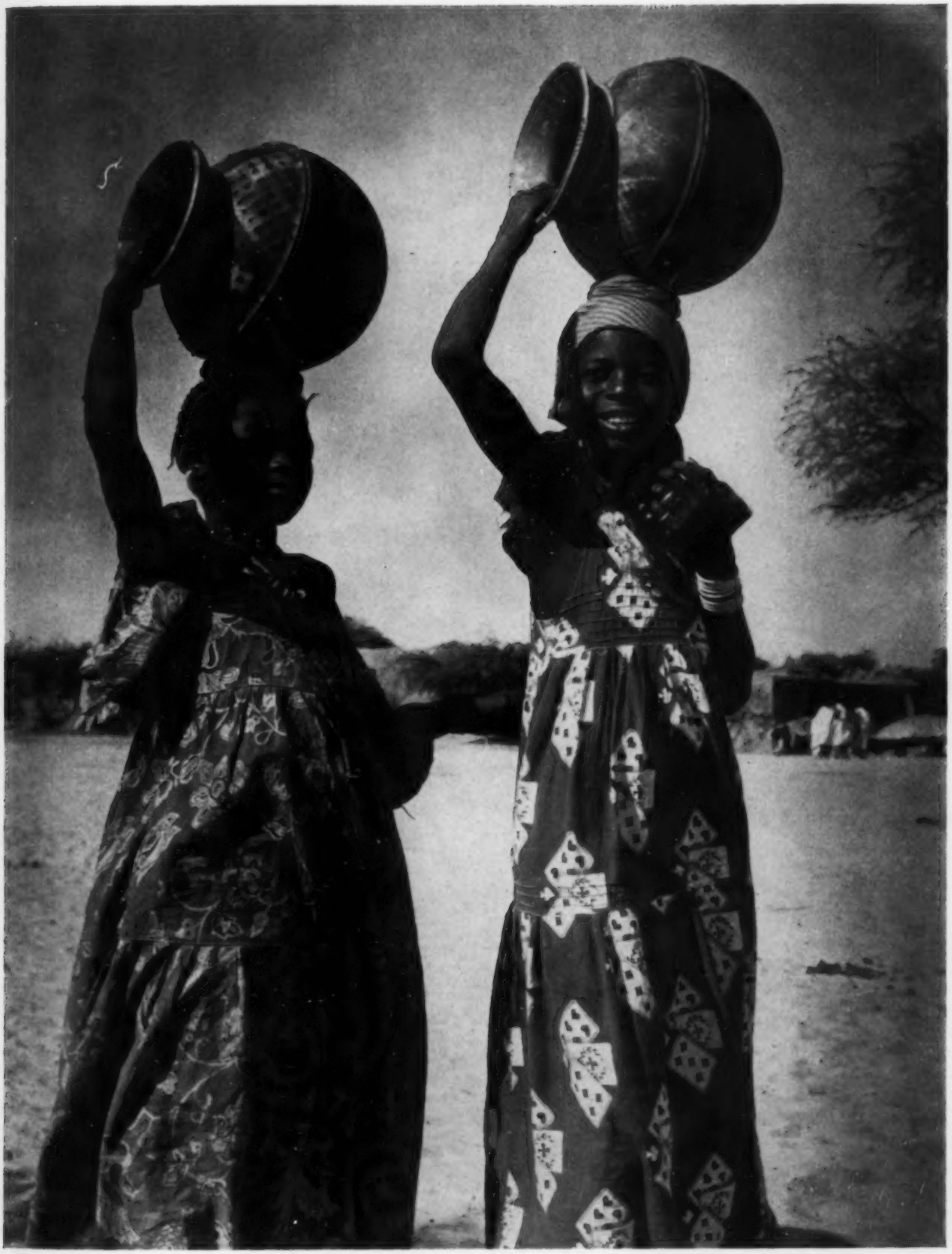
All the houses look much the same from the outside. The walls are two or three feet thick, made of sun-dried mud bricks. Gutters extend several feet from the roofs to carry off the small annual rainfall, which must be prevented from washing away the mud foundations. Doors are heavy wooden slabs, studded with brass or iron. Windows are small, encrusted with carved wood, and without glass.

The interior of any house is dark, especially after the blazing sunlight of the streets. The floors are cool, either of sand or hardened clay. Furniture is scarce in most houses, and not greatly needed. Well-to-do residents have divans, with brightly dyed and ornately tooled leather cushions, and perhaps hangings of handmade cloth.

Tombouctou boasts no newspaper, no hotel, no restaurant, no movie, no sewage or water system, but the government supplies a guest house and caretaker, who will purchase food and prepare meals. French civil administration is in the hands of the Chief Resident and his Aide. A small garrison of French soldiers occupies Fort Bonnier and, with the aid of the famous camel corps, maintains law and order in the surrounding district.

Tombouctou long had the reputation of being not only inaccessible, but also inhospitable. Before the eighteenth century there is little record of white visitors. An Italian was in the city in 1470, and a captured French sailor died there in slavery in the 1600s.

Major Gordon Laing who reached Tombouctou in 1826 from Tripoli was killed there by the Fula. In 1828, René Caillié, a young Frenchman whose sole ambition in life was to reach the fabulous city of Tombouctou, arrived there from the south, disguised as a Moor. He stayed two weeks, and carried back to Algiers and France the story of a great city now ruined by Tuareg raids. It was such a disillusionment that few believed him until his findings were confirmed by Barth, an accredited representative of the British Government, in 1853. Plaques over



Empty pitchers on their way to the well to be filled with water. The pottery of Tombouctou is good in form, rather garish in decoration.

A channel provides water to irrigate the fields. The water is hauled from the channel by the skinful, by means of the weighted sweep. In the foreground here melons and corn are growing. Luscious tomatoes and lettuce and carrots are also grown.

Water is taken to town in goatskins filled by means of the gourd hanging over the carrier's arm.

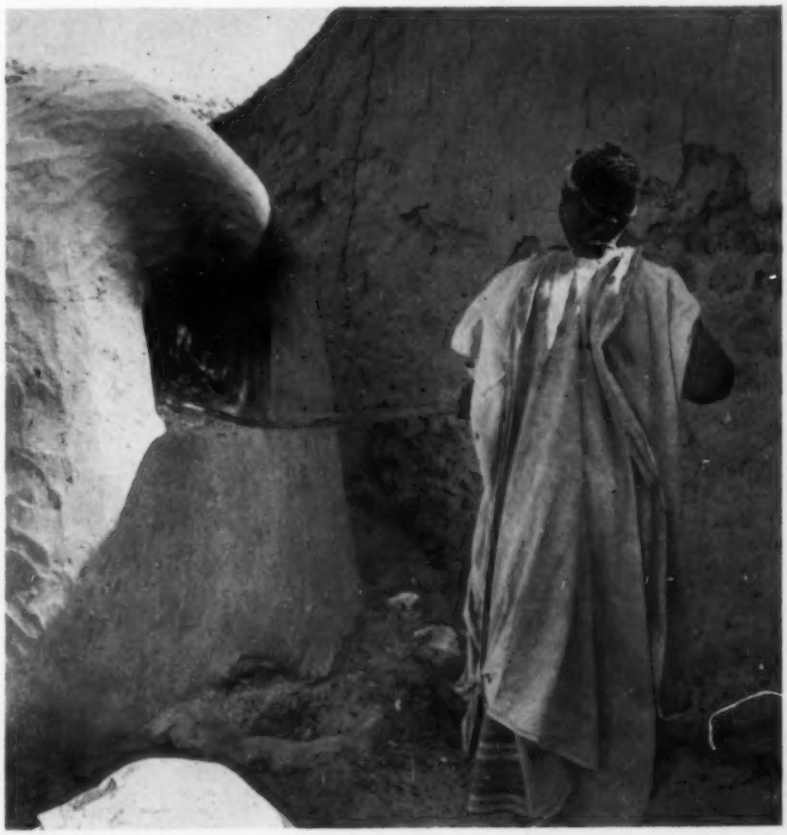
the doors of the houses in which they stayed commemorate the visits of Laing, Caillié, Barth, and Lenz who reached the town in 1880.

After centuries of capture and recapture, plunder and raids, the people of Tombouctou welcomed the arrival of the French forces in 1893. French rule was quickly established and with it a measure of prosperity has returned to the once important city. It is still the crossroads of the Sudan for the camel caravans, and a meeting place for agricultural prod-

A dead-end channel of the Niger flows to the walls of Tombouctou and is navigable by canoes—dugouts or planks laced together with palm leaf fibre. The channel, too, serves as laundry and provides some drinking water, though most of the latter comes from wells.

uce from Gao and Goundam. For a few years, Tombouctou had its own small airstrip and hangar, but the desert has vanquished them.

Tombouctou is no longer inaccessible, though admittedly it is still far away. In March, 1952, Air France inaugurated a new service, a weekly flight from Bamako to Gao, with a pause at Goundam. From there, the 70 miles of desert may be traversed by camel in two days or by military transport in one night. The famous city is no longer a synonym for the mysterious.



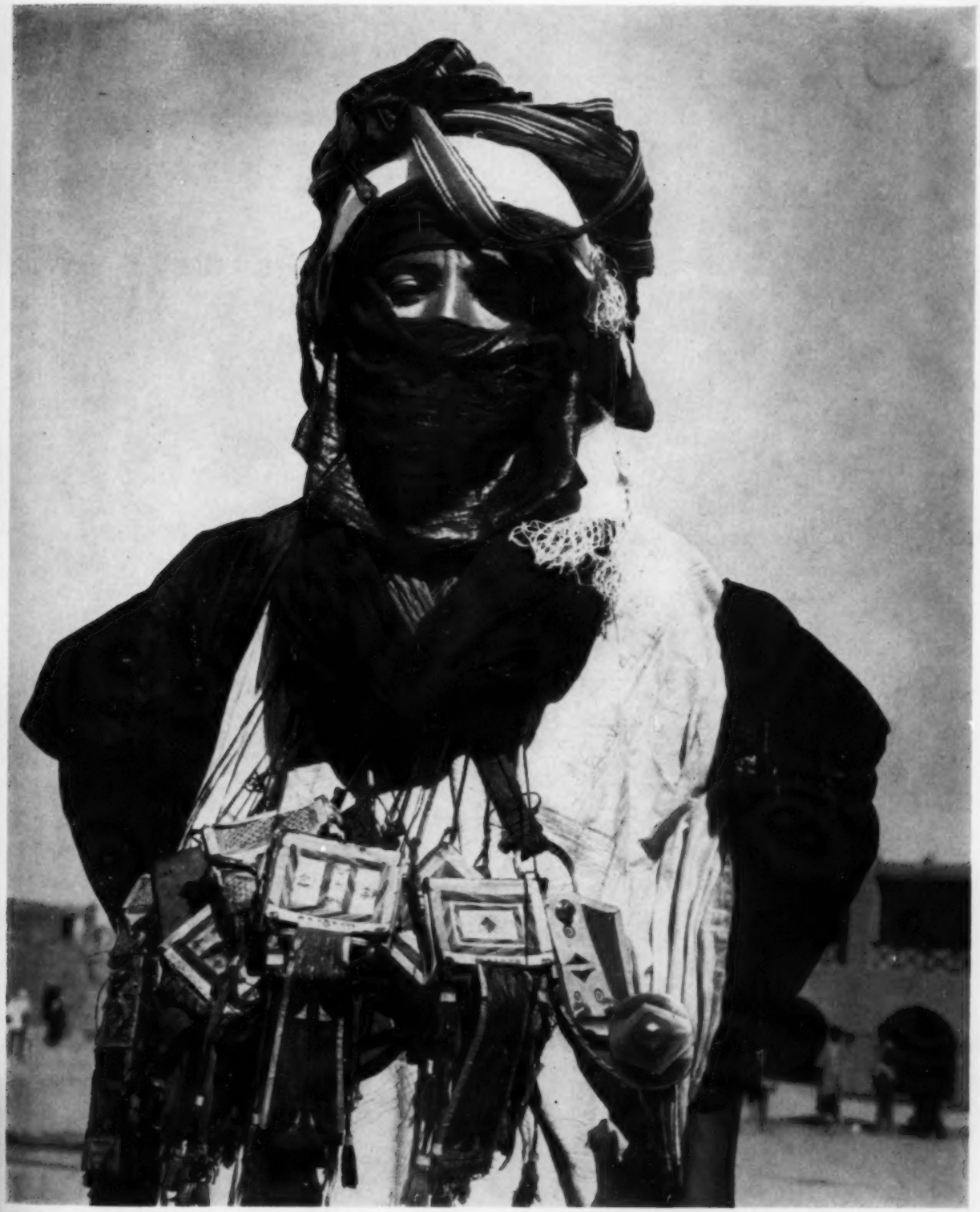
Bread is baked in beehive-shaped public ovens made of thick clay, and preheated with wood.

Her face shows Arabian and Sudanese ancestry. She has shaved off her hair and wears a wig or a kerchief draped in different ways.

This Moor with the handsome aquiline features drapes a fringed shawl round his head as a turban—and the effect is dramatic.

One of the dark Sudanese Negroes with his son —possibly a descendant of the Songhoi who created an empire about Tombouctou under their ruler Askia in the early sixteenth century, when the city rose to great splendour.

Mystery, good humour, invitation—who knows what is behind those dusky eyelashes? An attractive young Sudanese (Arma or Songhoi) Negro wears a lot of jewellery. Her coiffure is a mixture of kinky hair and braided wool yarn.



Tombouctou is a crossroads of humanity as well as of trade. Many different races of Africans are found there, including the Tuaregs, of Berber stock, who were masters of the city at several stages of its history. The Tuareg men conceal their lower features with veils — white, or blue — and their religion has degenerated into superstition. This young man with the proud dark eyes wears many amulets in beautifully tooled leather pouches.

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As one of its major activities in carrying out its purpose, the Society publishes a monthly magazine, the Canadian Geographical Journal, which is devoted to every phase of geography—historical, physical and economic—of Canada, of the British Commonwealth and of the other parts of the world in which Canada has special interest. It is the intention to publish articles in this magazine that will be popular in character, easily read, well illustrated and educational to the young, as well as informative to the adult.

The Canadian Geographical Journal will be sent to each member of the Society in good standing. Membership in the Society is open to any one interested in geographical matters. The annual fee for membership is four dollars (Canadian currency).

The Society has no political or other sectional associations, and is responsible only to its members. All money received is used in producing the Canadian Geographical Journal and in carrying on such other activities for the advancement of geographical knowledge as funds of the Society may permit.

EDITOR'S NOTE-BOOK

Canadian Tulip Festival

This year Canada inaugurates the Tulip Festival, which will take place in the capital from May 16th to 24th. As first planned, the festival was to be a local event, but Ottawa's magnificent tulips have gained such renown that the city's Board of Trade decided to respond to many enquiries by making it a national affair. About 750,000 tulips will display their varied beauty in the public parks and driveways. Canadians may well be proud of their capital in her spring glory.

* * *

Contributors

Phil Shackleton (*Woodenware of Ontario Pioneers*) and his wife are writers, photographers, amateur farmers, and keen students of the cultural history of Ontario. They are now adding to their activities by becoming summertime antique dealers, specializing in early Canadian wares, at their farm at Spencerville, Ontario. — John Davis (*Natural Gas in North America*) is an authority on all phases of the natural gas industry. Dr. Davis is director of the economics division of the Canadian Department of Defence Production. — Kay Cannon (*Coronation Court of Claims*), now in England, was formerly on the editorial staff of the Society. — Hon. A. E. Arsenault (*Confederation Chamber*), retired judge and former premier, has made a life-long study of the historical aspects of his native province of Prince Edward Island. — Richard Harrington (*Tombouctou*) once more leaves the Canadian scene for a visit to Africa. Mr. Harrington much prefers that the name of this intriguing place should be written in the familiar way, Timbuktu, but modern usage is against it.

* * *

A Dragon Apparent

by Norman Lewis

(Clarke, Irwin, Toronto, $3.25)

As the blight of war and dissension spread over the Asiatic countries, disrupting communication between east and west save in hostile or suspicious terms, Norman Lewis decided he must waste no time in seeing something of the Far East before its transformation. China was already beyond reach when he took air passage to the country still marked on the maps as Indo-China — the nations of Vietnam (Tonkin, Annam, and Cochin China), Laos and Cambodia. These three countries theoretically became independent within the French Union in 1949, but this "independence" was not such as to satisfy the nationalists of Vietnam, the Viet-Minh. Cambodia and Laos are pacific backwaters in the troubled world, but Vietnam contains 17 million of the Indo-Chinese countries' population of 25 million.

Norman Lewis set out to study the people in this part of the world which is one of the most strategically important though one of the lesser publicized battlegrounds of our times, containing, as it does, a large part of the French Army. Mr. Lewis proves himself an excellent observer. He travelled over much of the country and met many people of many races, from emperor to villager, from French colonial official to American missionary. In colourful, fluent writing, Mr. Lewis conveys appreciation of some of the problems of the Indo-Chinese, sympathy with their way of life, and a feeling of regret that the ponderous forces of the west and upsurging "nationalism" must bear so heavily on them. He tells of the difficulties of sympathetic French administrators beset by demands to supply men for military service and for plantation labour. He deals mostly with the people of the many racial groups. The Vietnamese are by far the largest group and theirs is a more sophisticated, money society. They have a mania for gambling; the children gamble for candies; housewives gamble for their purchases (obliging merchants keep a bowl of dice on the counter) and often return home empty-handed and moneyless; and at New Year all kinds and conditions stake their possessions on a fall of the dice with a sense of submission to destiny. He writes of the handsome, im-

(*Continued on page IX*)

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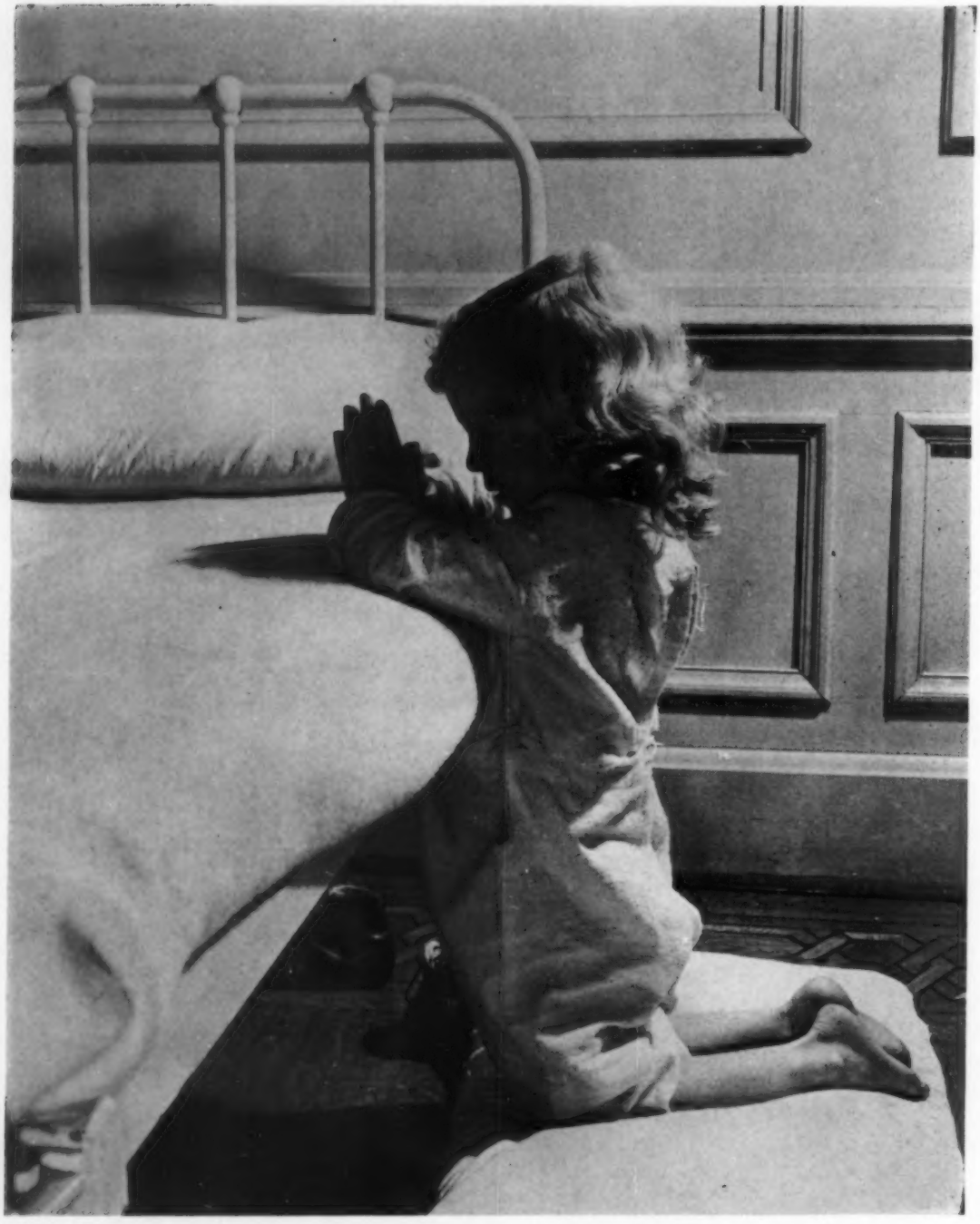

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(*Continued from page VIII*)

provident Mois with their unique racial sagas and convivial rituals, "great talkers and topers", who are being exploited out of existence. Of the charming life of the Laotians and Cambodians; the gentle Cambodians, monastery trained, who take literally the admonition "Thou shalt not kill". Of the Meos, independent and fearless, elegantly dressed and barbarously housed, with their predilection for mountain tops.

Having started his travels under the auspices of the French administration, Mr. Lewis had difficulty in crossing into Viet-Minh territory. Through casual contacts and the good offices of a dance hostess in a night club in Cholon he was eventually put in touch with some revolutionary nationalists in Saigon and finally succeeded in making a trip to the Viet-Minh side.

Mr. Lewis's photographs are very beautiful and are well used to illustrate the book. And an excellent folded-in map, depicting not only the relevant country but the distribution of the ethnic groups, adds appreciably to happy reading of *A Dragon Apparent*.

M. FELTON

* * *

The Flight of the Arctic Tern

by Constance and Harmon Helmericks

(McClelland & Stewart, Toronto, $5.00)

Bud and Connie Helmericks can be depended on to turn out an interesting and readable book and to risk death again and again in collecting material for it. Just why they go out on these death-defying journeys, I have never been able to understand for the scientific results of their expeditions do not quite seem to justify either the risks or the expense involved. If it's merely a wonderful way of enjoying life, I'm all for it, — and for them.

In the present volume, *The Flight of the 'Arctic Tern'*, we are given an entertaining résumé of their adventures in Alaska, especially the Arctic Plains and in the adjacent parts of Canada. Now travelling in their own plane instead of on foot, or by canoe, or by dog team, they meet again many of their old friends, mostly Eskimos, and are often able to be of material assistance to them. They evidently got some excellent photographs, both stills and movies, in black and white as well as in colour. They collected some series of small mammal skins and, in addition to their work in natural history, their observations on the inland Eskimo of Chandler Lake are of real value.

Why, then, should as skilful a writer as Connie, or as experienced a traveller as Bud, allow this otherwise excellent book to be so seriously marred by gross errors and exaggerations? I'm not going to attempt to list them all, for there isn't room, but here are some of the most serious. They really are serious, for having caught the author in one mistake, one naturally wonders how reliable the rest of the book can be.

While flying over northern New York State on their way to Alaska (page 10), they crossed a landscape which reminded them of the Arctic. They say, "In this general region, the last Ice Age has left visible traces and Dorset-type Eskimo skulls tell that Eskimos lived here not long ago." Now, I know the Dorset Eskimo culture pretty well and this statement surprised me considerably because no "Dorset-type" skeletal material has yet been found, in fact we are searching for it eagerly. To make sure of my ground, I consulted a recent paper (1950) by Dr. Henry B. Collins, of the Smithsonian Institution, one of the leading specialists in Eskimo archaeology. He says quite plainly, "As no skeletal remains have been found at Dorset sites the physical type associated with this early culture remains unknown." Incidentally, if Dorset skulls *were* found in

(*Continued on page XI*)

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(*Continued from page X*)

that general vicinity, it would not prove that Eskimos lived there "not long ago", but the contrary, for the Dorset culture is the earliest known in the eastern Arctic.

On their way from Rockcliffe to Trout Mills, Ontario, (page 14), they flew a little north of west. "Cutting across a corner of Quebec near Montreal, [which is over a hundred miles in the opposite direction], we winged over small farms where the French-Indian people below could be seen plowing with cows and oxen hitched up for draft animals", they tell us. It is true that their flight route would take them over about fifty miles of the Province of Quebec, but it was a long way from Montreal and I rather doubt the ploughing cows. And who are these French-Indian people?

There is mention, on page 48, of the very cold winter of 1946-47. "Day after day of 60 below and 70 below and once even 80 below zero weather *throughout British Columbia*, the Yukon, and interior Alaska". Can you imagine 80 below in Victoria or Vancouver? (The italics are mine.)

By page 149, they have reached Aklavik. "The first new public health doctor who had ever been appointed for this region had arrived but last week". This was in the summer of 1947, though the date is not given in the text. Now, there are two hospitals in Aklavik and have been for many years, and there have been doctors there for a good long time, too. Dr. Livingstone, for one, and several others. These are facts that the Helmericks could easily have discovered just by asking at the hospitals. Surely they can not have been unaware of their existence, or does the explanation lie in the phrase "public health doctor"?

We are informed on page 157 that "It may not be generally realized, but Canada has set aside four tremendous reserves for her native Indian and Eskimo people (totalling perhaps merely 1,800 people in all)". The fact is that the native Indian and Eskimo population of Canada numbers about 140,000. If the authors were referring to the arctic area alone, the Eskimo population is over 9,000 and then there are the Indians in the north to add to that.

Also on page 157 we are told that "no trace has yet been found of man ever having existed on the more northerly islands". On the contrary, the coasts of these northern arctic islands, even to the north tip of Ellesmere, are liberally strewn with the ruins of old Eskimo houses. We have often wondered when they were abandoned and why. Dr. Henry Collins, already mentioned, recently excavated some which yielded specimens from two distinct prehistoric Eskimo cultures, the Dorset and the Thule.

And so it goes on. I have ignored more blunders than I have revealed. I can only ask again, why spoil a good book by bad reporting? Did they say to themselves, nobody knows about Canada anyway, so what does it matter? Did they suppose that nobody in Canada would read their book? I should be much interested in learning their answer.

DOUGLAS LEECHMAN